

UTILITY PATENT APPLICATION TRANSMITTAL

(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
4-154US-FF

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Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

IMAGE DATA COMMUNICATION SYSTEM, SERVER SYSTEM, METHOD OF CONTROLLING OPERATION OF SAME, AND RECORDING MEDIUM STORING PROGRAM FOR CONTROL OF SERVER SYSTEM

and invented by:

Norihisa Haneda, Yoshinori Ohta, and Keisuke Tanaka

If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

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Enclosed are:

Application Elements

1. ☒ * Filing fee as calculated and transmitted as described below
2. ☒ Specification having 86 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications (if applicable)
 - c. ☐ Statement Regarding Federally-sponsored Research/Development (if applicable)
 - d. ☐ Reference to Microfiche Appendix (if applicable)
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings (if drawings filed)
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

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Application Elements (Continued)

3. ☒ Drawing(s) (when necessary as prescribed by 35 USC 113)
- a. ☒ Formal Number of Sheets 37 (Figs. 1-48)
- b. ☐ Informal Number of Sheets _____
4. ☒ Oath or Declaration
- a. ☒ Newly executed (original or copy) ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional application only)
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference (usable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Computer Program in Microfiche (Appendix)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (if applicable, all must be included)
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy (identical to computer copy)
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(B) Statement (when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☐ Certificate of Mailing
- ☐ First Class ☐ Express Mail (Specify Label No.): _____

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Accompanying Application Parts (Continued)

15. ☒ Certified Copy of Priority Document(s) (if foreign priority is claimed)

16. ☐ Additional Enclosures (please identify below):

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	22	- 20 =	2	x \$18.00	\$36.00
Indep. Claims	10	- 3 =	7	x \$78.00	\$546.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$690.00
OTHER FEE (specify purpose) Assignment Recordation					\$40.00
TOTAL FILING FEE					\$1,312.00

- ☒ A check in the amount of **\$1,312.00** to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **50-0481** as described below. A duplicate copy of this sheet is enclosed.
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- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).


Signature

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**APPLICATION
FOR
UNITED STATES
LETTERS PATENT**

APPLICANT: Norihisa Haneda, Yoshinori Ohta, and
Keisuke Tanaka

FOR: IMAGE DATA COMMUNICATION
SYSTEM, SERVER SYSTEM,
METHOD OF CONTROLLING
OPERATION OF SAME, AND
RECORDING MEDIUM STORING
PROGRAM FOR CONTROL OF
SERVER SYSTEM

DOCKET NO.: 4-154US-FF

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SPECIFICATION

TITLE OF THE INVENTION

IMAGE DATA COMMUNICATION SYSTEM, SERVER SYSTEM, METHOD
OF CONTROLLING OPERATION OF SAME, AND RECORDING MEDIUM
5 STORING PROGRAM FOR CONTROL OF SERVER SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to an image data
communication system in which a plurality of client
10 computers and a server system are capable of
communicating with each other via a network, a server
system and a method of controlling the operation
thereof, and a recording medium storing a program for
controlling the server system.

15 The invention relates further to a registration
system for an image database, an image database search
system, registration and search methods, and a recording
medium storing a program for controlling an image
database.

20 Description of the Related Art

An image data communication system for uploading
image data from a client computer to a server system is
constructed via a network such as the Internet. By
accessing the server system, image data that has been
25 uploaded to the server system is downloaded to the
client computer.

If image data containing a large quantity of data
is uploaded to the server system, an image printed using

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this image data will have a high quality. However, downloading a large quantity of image data takes time. If image data containing a small quantity of data is uploaded to the server system in order to shorten
5 download time, the image quality of the image printed using this image data will decline.

Some image databases allow the input of a keyword (search information), which is for searching image data that has been registered in the database, using a
10 keyboard or the like. Thus, means for inputting the keyword is required.

In some arrangements, alphanumeric characters contained in an image are extracted and the extracted alphanumeric characters are registered as a keyword in
15 an image database in association with the image data. However, such an arrangement requires a special device to extract the alphanumeric characters from the image.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is
20 to arrange it so that image data possessing a plurality of image qualities can be uploaded to a server system.

Another object of the present invention is to arrange it so that image data and search information for searching the image data can be registered in an image
25 database in a comparatively simple manner.

An image data communication system according to the present invention is such that a plurality of client computers and a server system are capable of

communicating with each other via a network.

The client computer has an original-image data specifying unit for specifying original-image data that is to be transmitted to the server system, and an
5 original-image data transmitting unit for transmitting the original-image data, which has been specified by the original-image data specifying unit, to the server system.

The server system has an original-image data
10 receiving unit for receiving the original-image data transmitted from the original-image data transmitting unit; an image data generating unit (image data generating means), which responds to receipt of the original-image data by the original-image data receiving
15 unit, for generating reduced-data-quantity image data of two stages representing at least two images possessing data quantities of at least two stages in each of which the quantity of data is less than that of the original-image data; and a unit (means) for associating the
20 original-image data, which has been received by the original-image data receiving unit, and the reduced-data-quantity image data that has been generated by the image data generating unit.

The present invention provides also a method of
25 controlling the operation of the above-described server system. Specifically, there is provided a method of controlling the operation of a server system capable of communicating with a client computer via a network,

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The original-image data is transmitted from the client computer of the server system.

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When an image is to be checked at the client computer, a first item of reduced-data-quantity image data, which contains the smaller quantity of data, is transmitted from the server system to the client
5 computer. Since the quantity of data is small, the time needed to transmit the data to the client computer is shortened. When confirmation of an image cannot be performed based upon the image represented by the first item of reduced-data-quantity image data, a second item
10 of reduced-data-quantity image data is transmitted to the client computer. Because the quantity of data in the image represented by the second item of reduced-data-quantity image data is greater than that of the first item of reduced-data-quantity image data, the
15 image is easier to see. This makes it easier to confirm the image. In a case where an image having an even greater quantity of data is to be obtained, the original-image data is transmitted from the server system to the client computer. This makes it possible
20 to print an image having a higher image quality.

Associating the original-image data and the reduced-data-quantity image data may be performed by storing the data in the same file or by assigning the same number to the data.

25 An arrangement may be adopted in which the server system generates image data having a predetermined specific data format that is independent of the data format of the original-image data.

Image data has a variety of formats and cases arise in which only image data having a predetermined specific data format is required at the client computer. When image data (the original-image data, the reduced-data-
5 quantity image data, etc.) is transmitted from the server system to the client computer in such cases, the format of the data is converted to the specific data format of the client computer.

Since the conversion is made to image data having
10 the predetermined specific format, the data format conversion need not be made at the client computer.

It is preferred that the image data generating unit generate reduced-data-quantity image data of a prescribed format (a data format the same as or
15 different from that of the original-image data) that is independent of the data format of the original-image data.

In a case where image data of reduced data quantity is utilized, it is unnecessary to perform the format
20 conversion at the time of such utilization. For example, in a case where an image of reduced data quantity represented by reduced-data-quantity image data of a prescribed format can be displayed or printed, etc., it is unnecessary to perform the format conversion
25 again for the sake of such display or printing.

It is preferred that the server system be further provided with a memory in which the quantity of original-image data that can be stored is allocated

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Thus the server system converts the format of the reduced-data-quantity image data to that of image capable of being displayed on the display unit of the client computer. Image data that has been transmitted
5 from the server system to the client computer is capable of displaying an image without being subjected to a format conversion in the client computer.

The client computer further includes a transmission requesting unit for sending the server system a request
10 to transmit at least one item of image data among the original-image data and reduced-data-quantity image data of two stages that has been stored in the storage unit.

In this case, the server system further includes a transmission-request receiving unit for receiving the
15 transmission request transmitted from the transmission requesting unit of the client computer; a first reception-privilege determination unit for determining whether the privilege to receive image data specified by the transmission request received by the transmission-
20 request receiving unit resides with the client computer that issued the transmission request; and a data transmitting unit, which is responsive to a determination by the first reception-privilege determination unit to the effect that the privilege
25 resides with the client computer, for reading the image data specified by the transmission request out of the memory unit and transmitting this image data to the client computer, and which is responsive to a

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determination by the first reception-privilege
determination unit to the effect that the privilege does
not reside with the client computer, for sending the
client computer data indicating that transmission is not
5 allowed.

Thus, the transmission request is transmitted from
the client computer to the server system. In a case
where reception privilege resides with the client
computer that transmitted the transmission request,
10 image data that conforms to the transmission request is
transmitted from the server system to the client
computer.

By granting the reception privilege to a specific
client computer, it is possible to allow the specific
15 client computer to receive the image data. The
reception privilege can be decided in dependence upon
the image data. For example, it is possible to
prescribe a client computer that is denied a privilege
to receive any image data, a client computer that is
20 allowed to receive only the first item of reduced-data-
quantity image data, a client computer that is allowed
to receive both of the two items of reduced-data-
quantity image data, and a client computer that is
allowed to receive all image data inclusive of the
25 original-image data.

The server system may further include an end-
message transmitting unit, which is responsive to
storage of the original-image data and the reduced-data-

5 By receiving the end message, the client computer is capable of ascertaining the fact that the original-image data has been stored in the storage unit of the server system.

15 In this case, it is preferred that the server
system include an image search-condition receiving unit
for receiving image search conditions that have been
transmitted from the image search-condition transmitting
unit; a search unit (search means) for searching, on the
20 basis of the image search conditions received by the
image search-condition receiving unit, at least one item
of data among the original-image data and reduced-data-
quantity image data of the two stages stored in the
storage unit; and a search-result information
25 transmitting unit for sending the client computer
information (the image represented by the image data,
conditions that match the image search conditions, an
indication of whether the image data of interest exists

or not, etc.) relating to results of the search conducted by the search unit.

Thus, by inputting image search conditions from the client computer, an image conforming to the input image
5 search conditions is searched for in the server system. Information relating to the results of the search is transmitted from the server system to the client computer. By inputting the image search conditions at the client computer, information relating to the results
10 of the search is obtained at the server system.

The server system may further include a second reception-privilege determination unit for determining whether the privilege to receive image data, which has been found as a result of the search conducted by the
15 search unit, resides with the client computer. In this case, the search-result information transmitting unit, in response to a determination by the second reception-privilege determination unit to the effect that the privilege resides with the client computer, sends the
20 client computer the image data found as a result of the search conducted by the search unit.

Thus, the image data is transmitted to the client computer that has the privilege to receive the data.

An image database registration system according to
25 the present invention comprises: an image file input unit for inputting an image file which includes an additional-information recording area in which additional information has been recorded and an image-

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data recording area in which image data representing an image has been recorded; an additional-information reading unit for reading the additional information that has been recorded in the additional-information

- 5 recording area included in the image file input from the image file input unit; an image data reading unit for reading the image data that has been recorded in the image-data recording area included in the image file input from the image file input unit; and a storage
- 10 control unit for storing the additional information that has been read by the additional-information reading unit and the image data that has been read by the image data reading unit in a storage unit in association with each other.

- 15 The present invention provides also a method suited to this system. Specifically, the method comprises the steps of: inputting an image file which includes an additional-information recording area in which additional information has been recorded and an image-
- 20 data recording area in which image data representing an image has been recorded; reading the additional information that has been recorded in the additional-information recording area included in the image file that has been input; reading the image data that has
- 25 been recorded in the image-data recording area included in the image file that has been input; and storing the additional information that has been read and the image data that has been read in a storage unit in association

with each other.

The present invention provides a program for controlling the above-described image database registration system.

5 When additional information and image data have thus been stored in the storage unit in association with each other, image data can be searched as set forth below.

Specifically, an image database search system
10 according to the present invention comprises: a storage unit in which additional information, which has been recorded in an additional-information recording area of an image file, and image data, which has been recorded in an image-data recording area of the image file, are
15 stored in association with each other; an additional-information input unit for inputting additional information; a search unit (search means) which, on the basis of the additional information that has been input from the additional-information input unit, retrieves
20 the corresponding image data from the storage unit; and an image data output unit for outputting image data that has been found by the search conducted by the search unit.

The present invention provides also a method suited
25 to this system. Specifically, the method comprises the steps of: storing additional information, which has been recorded in an additional-information recording area of an image file, and image data, which has been

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recorded in an image-data recording area of the image
file, in a storage unit in association with each other;
inputting additional information; on the basis of the
additional information that has been input, retrieving
5 the corresponding image data from the storage unit; and
outputting image data that has been found by retrieval.

The present invention provides also a recording
medium storing a program for executing the above-
described image database search system.

10 In accordance with the present invention,
additional information is recorded in the additional-
information recording area of the image file and image
data is recorded in the image-data recording area of the
image file. The additional information that has been
15 recorded in the additional-information recording area
and the image data that has been recorded in the image-
data recording area are stored in the storage unit
(second storage unit) in association with each other.

Additional information can be recorded in an image
20 file that includes an additional-information recording
area without using an input unit for inputting a
keyword. Image data can be retrieved using the
additional information as search information. Further,
there is no need for a special device for extracting
25 alphanumeric characters from an image, as in a case
where alphanumeric characters contained in an image are
used as a keyword.

Other features and advantages of the present

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invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram showing an overview of an image data communication system;

Fig. 2 is a block diagram showing the electrical structures of a client computer and server system in a first embodiment of the present invention;

Fig. 3 illustrates an example of a user table;

Fig. 4 illustrates an example of a next-ID table;

Fig. 5 illustrates a group-ID table;

Fig. 6 illustrates an example of a data table;

Fig. 7 illustrates an example of an access table;

Fig. 8 illustrates an example of a binary table;

Fig. 9 illustrates the organization of folders stored in an image file unit;

Fig. 10 shows flowcharts illustrating processing procedures of the client computer and server system;

Figs. 11 to 13 illustrate examples of windows displayed on a display unit of the client computer;

Figs. 14 and 15 are flowcharts illustrating processing procedures of the client computer and server system;

Fig. 16 illustrates an example of a window displayed on the display unit of the client computer;

Figs. 17 to 20 are flowcharts illustrating processing procedures of the client computer and server system;

Figs. 21 to 28 illustrate examples of windows
5 displayed on the display unit of the client computer;

Fig. 29 is a block diagram illustrating the electrical structure of a server system capable of communicating with the client computer in a second embodiment of the present invention;

10 Fig. 30 illustrates an example of a window displayed on the display unit of the client computer;

Fig. 31 illustrates the organization of folders;

Fig. 32 is a flowchart illustrating the procedure of processing executed by the client computer when an
15 image file is registered;

Fig. 33 is a flowchart illustrating the procedure of processing executed by the server system when an image file is registered;

Fig. 34 is a flowchart illustrating the procedure
20 of processing executed by an image receiving unit;

Fig. 35 is a flowchart illustrating the procedure of processing executed by an image-file registration unit;

Fig. 36 illustrates an example of a window
25 displayed on the display unit of the client computer;

Fig. 37 illustrates the overall configuration of a system according to a third embodiment of the present invention;

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Fig. 38 is a block diagram illustrating the electrical structures of a digital camera, image transmitting unit, image database server and client computer constructing the system shown in Fig. 37;

5 Fig. 39 illustrates the structure of an image file;
 Fig. 40 illustrates an example of a product information table;

 Fig. 41 illustrates an image table;

 Fig. 42 illustrates an index management database;

10 Fig. 43 is a flowchart illustrating the procedure of processing executed by the digital camera;

 Fig. 44 is a flowchart illustrating the procedure of processing executed by the image transmitting unit;

 Fig. 45 is a flowchart illustrating the procedure
15 of processing executed by the image database server;

 Fig. 46 is a flowchart illustrating the procedure of processing executed by the client computer;

 Fig. 47 is a flowchart illustrating the procedure of processing executed by the image database server; and

20 Fig. 48 illustrates an example of a window displayed on the display unit of the client computer.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Preferred embodiments of the present invention will now be described in detail with reference to the
25 drawings.

(1) First embodiment

 Fig. 1 shows an overview of an image data communication system according to a first embodiment of

the present invention.

The image data communication system comprises client computers 1 and a server system 10. The client computers 1 and server system 10 are capable of communicating data with each other via a network such as the Internet.

In this image data communication system, original-image files (data) representing original images are transmitted from the client computers 1 to the server system 10.

The server system 10, besides storing a received original-image file temporarily, subjects an original-image file to a format conversion and generates a large-image file representing a large image. The server system 10 further generates a medium-image file, which is a file in which the quantity of data is less than that in the large-image file, and a thumbnail-image file in which the quantity of data is less than that in the medium-image file. The original-image file, large-image file, medium-image file and thumbnail-image file are included in one folder and stored in an image file unit 17, described later. The details of the image data communication system will become clear from the description that follows.

Fig. 2 is a block diagram showing the electrical structure of each client computer 1 and the electrical structure of the server system 10. Though each of the circuits shown in Fig. 2 is illustrated as being

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implemented by hardware, some or all of the circuits can be implemented by software (utilizing a memory such as a hard disk as necessary). Software implementation is preferred over hardware implementation.

5 The client computer 1 includes a computer 2, which in turn includes a CPU, a memory, a CD-ROM (compact disk read-only memory) drive and a display unit, etc. An operating program is stored on a CD-ROM 6 so that the client computer 1 will execute processing in the manner
10 described below. When the CD-ROM 6 is inserted into the client computer 1, the operating program is read by the computer 2.

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 The client computer 1 further includes an HTML engine 3 for displaying an image page, which is
15 generated in HTML (HyperText Markup Language), on the display screen of the display unit of computer 2, an image information storage unit 4 for temporarily storing image information (inclusive of image files, attachment files and database registration information), and an
20 image information controller 5 for transmitting image information, which has been stored temporarily in the image information storage unit 4, to the server system
10.

 The server system 10 includes a Web server 11,
25 which in turn includes a CPU, a memory, a CD-ROM drive and a display unit, etc. An operating program is stored on a CD-ROM 18 so that the server system 10 will execute processing in the manner described below. When the

CD-ROM 8 is inserted into the client computer 10, the operating program is read by the Web server 11.

The server system 10 further includes an HTML file unit 12 in which data for displaying an image page based upon HTML is stored, a database 15 for storing various data, a database controller 14 for causing various data to be stored in the database 15, an image file unit 17 for storing image files, attachment files and the like transmitted from the client computer 1, an image file controller 16 for controlling the storage of image files, attachment files and the like in the image file unit 17, and an image file processing unit 13 for overall control of the operation of the server system 10.

Figs. 3 to 8 are tables illustrating various data stored in the database 15 contained in the server system 10.

Fig. 3 is a user table. The user table stores information relating to the user who utilizes the image data communication system. The information in the user table is stored beforehand in the database 15 by the administrator of the server system 10.

Specifically, the table stores a user ID (User ID); a group number (Group ID) (the user constitutes a group composed of a plurality of users, and the group number is used to specify this group); a user name (User Name); a password (Password) for verifying that the user possesses the privilege to utilize the image data

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communication system; an indication (Entry OK) as to whether or not the user possesses the privilege to access a registration page displayed on the display unit of the client computer 1 when an original-image file is registered with the server system 10; an indication (Search OK) as to whether the user possesses the privilege to access a search page displayed on the display unit of the client computer 1 when image files that have been registered with the server system 10 are searched; an indication (Result OK) as to whether the user possesses the privilege to access a list-display page of search results; an indication (Detail OK) as to whether the user possesses the privilege to access a page indicating information more detailed than information found as the result of a search; and data representing whether the user possesses the privilege (binary-access privilege "Binary OK") to access an original image and a file attached to an original-image file.

Fig. 4 is a next-ID table. The next-ID table stores data relating to record numbers used to specify folders containing original-image files, large-image files, medium-image files and thumbnail-image files that have been stored in the image file unit 17 of the server system 10.

Specifically, the current record number (Current ID), which specifies the folder that was stored in the image file unit 17 last, and the next record number

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(Next ID), are stored in the next-ID table. This table is reset at initialization of the server system 10.

Fig. 5 is a group-ID table, which stores the group number (Group ID) and the group name (Group Name). Data that is stored in the group-ID table also is registered beforehand by the administrator of the server system 10.

Fig. 6 is a data table, which stores data relating to keywords entered when images are registered, as will be described later.

10 Stored in the data table are a record number, the ID (Owner ID) of the user (owner) that registered an image, the number (Num of Binary) of attachment files, and keywords (Image Info) (four keywords are indicated in Fig. 6).

15 Fig. 7 is an access table. This table stores data indicating the privilege to access an image that has been stored in an image file.

 Besides the record number, group numbers (Access ID0 - Access ID4) indicating a group number of privilege 0 to a group number of privilege 4 have been stored in the access table. A group number of privilege 0 indicates the number of a group that is denied access to all images, namely thumbnail, medium, large and original images. A group number of privilege 1 indicates the number of a group that is allowed to access a thumbnail image but is denied access to medium, large and original images. A group number of privilege 2 indicates the number of a group that is allowed to access thumbnail

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and medium images but is denied access to large and original images. A group number of privilege 3 indicates the number of a group that is allowed to access thumbnail, medium and large images but is denied
5 access to an original image. A group number of privilege 4 indicates the number of a group that is allowed to access to all images, namely thumbnail, medium, large and original images.

Fig. 8 is a binary table. This table stores data
10 regarding original-image data and an attachment file. These items of data are stored in the binary table when an image is registered.

Stored in the binary table are a record number, the user ID of the owner, the binary file number (Binary
15 Num), the file name (File Name) of the binary file and the byte size (Byte Size) of the binary file.

Fig. 9 illustrates the organization of folders stored in the image file unit 17 of the server system
10.

20 A first layer of image folders is stored in a root folder ROOT. A temporary storage folder TMP and image folders of folder numbers "00" to "FF" are included in the first layer of image folders. A second layer of image folders is stored in each of the image folders of
25 the first layer of folder numbers "00" to "FF". Image folders of folder numbers "00" to "FF" are included in the second layer of image folders. A third layer of image folders of folder numbers "00" to "FF" is stored

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in each of the image folders of the second layer of image folders. A fourth layer of image folders of folder numbers "00" to "FF" is stored in each of the image folders of folder numbers "00" to "FF" of the third layer.

A thumbnail-image file, medium-image file, large-image file, original-image file and attachment files are stored in the image folders of the fourth layer. A binary file number is assigned to the original-image file and to each attachment file.

These image folders are generated anew when thumbnail-image files, medium-image files and large-image files are generated and the generated thumbnail-image files, medium-image files and large-image files, along with the original-image files and attachment files, are stored in the image file unit 17.

An assemblage of the folder numbers of the first to fourth layers corresponds to a record number. The record number serves as a path to an image folder in which a thumbnail-image file, medium-image file, large-image file, original-image file and attachment files have been stored. For example, if the record number is "0000F823", an image folder in which a thumbnail-image file, medium-image file, large-image file, original-image file and attachment files have been stored is specified by the path "%ROOT%\00\F0\F8\F23".

Fig. 10 shows flowcharts illustrating processing procedures of the client computer 1 and server system

image information storage unit 4 and applying it to the computer 2, a window W2 of the log-in page shown in Fig. 12 is displayed on the display unit of the computer 2.

The log-in page window W2 includes a user-name
5 field A3, a password field A4 and an "OK" area A2.
Using the keyboard of the computer 2, the user of the client computer 1 enters his or her own name, whereby the entered name is displayed in the user-name field A3. Further, using the keyboard of the computer 2, the user
10 enters a password, in response to which asterisks are displayed in the field A4 (step 22). The password is for verifying whether the user possesses the privilege to utilize the image data communication system. A user having the privilege knows the password in advance.
15 When the entry of the user name and password has been completed, the user of the client computer 1 clicks the "OK" area A2.

User IDs have been stored in association with user names in the memory of the computer 2. When the "OK"
20 area A2 is clicked, the user ID is read out of the memory of computer 2. The user ID that has been read and the data representing the user name and password that have been entered are stored in the image information storage unit 4 temporarily. The items of
25 data indicating the user ID, the user name, the password and the main-menu page request are transmitted to the server system 10 (step 23).

The items of data indicating the user ID, the user

The database controller 14 is controlled by the image

10 Reference is had to the found user table to verify
the user name, the user ID and password (step 31). If
the result of verification is that the user has the
privilege to utilize the image data communication system
("OK" at step 32), then, under the control of the image
15 file processing unit 13, the main-menu page data is read
out of the HTML file unit 12 and is then transmitted to
the client computer 1 by the Web server 11 (step 34).
If the user has the utilization privilege, the group
number indicating the group to which the user belongs is
20 also read out of the user table and then transmitted to
the client computer 1. If the result of verification is
that the user does not have the privilege to utilize the
image data communication system ("NG" at step 32), then,
under the control of the image file processing unit 13,
25 error-page data is read out of the HTML file unit 12 and
is then transmitted to the client computer 1 by the Web
server 11 (step 33).

When the main-menu page data is received, a window

W3 indicating the main menu is displayed on the display unit of the computer 2, as shown in Fig. 13, at the client computer 1 (step 25). The main-menu window W3 includes a registration area A5, a search area A6 and a log-off area A7. Clicking the registration area A5 results in a transition to image registration processing (described later), and clicking the area A6 results in a transition to image search processing (described later). The client computer 1 logs off in response to clicking of the log-off area A7.

When the error-page data is received, a window indicating an error is displayed on the display unit of the computer 2 at the client computer 1. By observing the error window, the user of the client computer 1 ascertains that an error has occurred such as entry of an erroneous user name or password. If necessary, the user tries accessing the server system 10 again.

Figs. 14 and 15 are flowcharts illustrating processing procedures of the client computer 1 and server system 10. These flowcharts show the procedure of processing for registering image information. Fig. 16 illustrates an example of a window displayed on the display unit of the client computer 1.

Processing for registering image information is started by clicking the registration area A5 in the main-menu window W3 shown in Fig. 13.

When the registration area A5 is clicked by the user of the client computer 1, the user ID and data

representing an image-information registration request are transmitted from the image information storage unit 4 to the server system 10 (steps 40 and 41).

When the user ID and data representing the image-
5 information registration request are received at the server system 10, the user table having this user ID is searched for in the database 15. If the user table is found, the absence or presence of the privilege to access the registration page stored in the user table is
10 checked (step 51). If it is found that the user who issued the image-information registration request possesses the access privilege ("OK" at step 52), image-information input-page data is read out of the HTML file unit 12 of server system 10 and transmitted to the
15 client computer 1 (step 54). If it is found that the user who issued the image-information registration request does not possess the access privilege ("NG" at step 52), then error-page data is read out of the HTML file unit 12 of server system 10 and transmitted to the
20 client computer 1 (step 53).

If the image-information input page is received at the client computer 1, an image-information input page window W4 shown in Fig. 16 is displayed on the display unit of the client computer 1 (step 43). The user of
25 the client computer 1 inputs the image information using the image-information input page window W4 (step 44).

The image-information input page window W4 includes the following areas and fields:

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Image display area A8: This is an area which displays an image represented by an original-image file transmitted from the client computer 1 to the server system 10.

5 Image selection area A9: This is an area clicked by the user of the client computer 1 when an original-image file to be transmitted from the client computer 1 to the server system 10 is selected. A new window for entering a file name is displayed by clicking the area
10 A9. By entering a file name in this new window, the original-image file to be transmitted to the server system 10 is selected.

Attachment file name display area A10: This is an area which displays the file name of a file attached to
15 an original-image file and transmitted to the server system.

Attachment file add-on area A11: This is an area clicked by the user of the client computer 1 when an attachment file is to be added on. A new window for
20 entering an attachment file name is displayed by clicking the area A11. By entering an attachment file name in this new window, the attachment file to be transmitted is selected. The attachment file that has been selected is displayed in the attachment file name
25 display area A10.

Keyword input area A12: This is an area for displaying keywords (one type of image search condition) used when an original-image file to be transmitted is

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searched. A keyword related to an image displayed by the original-image file is entered. In Fig. 16, a maximum of four keywords can be entered with regard to one image. Of course, an arrangement in which five or
5 more keywords can be entered may be adopted.

Access privilege input fields A13 - A16: These are areas for entering the names of groups that are capable of accessing images registered with the server system. According to this embodiment, access privileges of the
10 five levels of 0 to 4 are available. Access privilege 0 denies access to all images, namely thumbnail, medium, large and original images, that have been registered with the server system 10. A group name given access
15 privilege 0 is written in the field A13. Access privilege 1 allows access to a thumbnail image but denies access to medium, large and original images. A group name given access privilege 1 is written in the field A14. Access privilege 2 allows access to
20 thumbnail and medium images but denies access to large and original images. A group name given access privilege 2 is written in the field A15. Access privilege 3 allows access to thumbnail, medium and large images but denies access to an original image. A group name given access privilege 3 is written in the field
25 A16. Access privilege 4 allows access to all images, namely thumbnail, medium, large and original images. A group name given access privilege 4 is written in the field A17.

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original-image file, the original-image file is read out of the computer 1 and is then transmitted to the server system 10 by the image information controller 5 (step 46).

5 When the original-image file is received by the server system 10, the file is stored in the temporary storage folder of the image file unit 17 by the image file controller 16 (step 56). The image file controller 16 provides the client computer 1 with notification of
10 completion of reception. The image file processing unit 13 provides the client computer 1 with a request for transmission of an attachment file.

 The attachment file is read out of the computer 2 and stored temporarily by the image information
15 controller 5. The attachment file stored is read out and transmitted from the client computer 1 to the server system 10 (step 47).

 After the attachment file transmitted from the client computer 1 is stored temporarily in the image
20 file controller 16, it is stored in the temporary storage folder of the image file unit 17 (step 57). When the attachment file is stored in the temporary storage folder, the image file controller 16 sends the client computer 1 notification of completion.

25 The next-ID table that has been stored in the database 15 is then searched by the database controller 14 and the next record number is read out. The current record number is updated to the next record number (step

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58). When the record number is updated to the next record number, a new image storage folder having the updated record number as a path is generated (step 59). The original-image file and attachment file stored temporarily in the temporary storage folder are stored in the image storage folder that has been generated (step 60).

The original-image file that has been stored in the image storage folder is read out and, in order that an image can be displayed on the display unit of the computer 2 of client computer 1, the file is subjected to a format conversion and a large-image file is generated by the image file controller 16 (step 61). By way of example, a large-image file in accordance with the JPEG (joint photographic coding experts group) standard is generated from a bitmap original-image file by the format conversion. If the original-image file is already a file having a format that is the result of a format conversion, then a format conversion is not carried out. In such case the original-image file and the large-image file are the same. When the formats of the original-image file and large-image file are identical, both of the files may be stored in the image storage folder or only the original-image file may be stored in the image storage folder.

A subsampling rate is decided in the image file controller 16 based upon the large-image file that has been generated. Subsampling processing is executed by

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Subsampling of the generated medium-image file is performed by the image file controller 16 to generate a thumbnail-image file (step 63). The generated large-image file, medium-image file and thumbnail-image file are stored in the image storage folder as that of the original-image file and attachment file. The fact that these files have been stored is transmitted from the image file controller 16 of the server system 10 to the client computer 1. Though the large-image file, medium-image file and thumbnail-image file have the same format, they need not necessarily have the same format. Further, though the medium-image file and thumbnail-image file are generated by subsampling the large-image file, an medium-image file the quantity of data of which is less than that of the original-image file and a thumbnail-image file the quantity of data of which is less than that of the medium-image file may be generated without necessarily executing subsampling. For example, the medium-image file and thumbnail-image file can be generated by subjecting the original-image file (large-image file) to partial segmentation, color-reduction processing, compression processing and a format conversion, etc.

The image file processing unit 13 of the server

5 (step 64). More specifically, a new data table (see Fig. 6), access table (see Fig. 7) and binary table (see Fig. 8) are generated for each record number and stored in the database 15.

10 is stored in the database 15 ("OK" at step 65),
registration-complete page data is read out of the HTML
file unit 12 by the Web server 11 and the data is
transmitted to the client computer 1 (step 68). If
storage of the database registration information in the
15 database 15 fails ("NG" at step 65), the image storage
file that was newly generated in the image file unit 17
is deleted (step 66). It goes without saying that the
updated record number also is restored to the original
number. Registration-failure page data is read out of
20 the HTML file unit 12 and transmitted to the client
computer 1 (step 67).

25 on the display unit of the computer 2. By observing the
window indicative of completion of registration, the
user of the client computer 1 is capable of confirming
that an image file has been registered with the server

system 10 without failure. Since an original-image
file, large-image file, medium-image file and thumbnail-
image file have already been stored in the server system
10, the user of the client computer 1 that registered
5 the image file is capable of accessing the desired image
file by accessing the server system 10 using the client
computer 1. Furthermore, a user other than the user of
the client computer 1 that registered the image file
can, in dependence upon the access privilege of this
10 user, access the original-image file, large-image file,
medium-image file or thumbnail-image file.

The original-image file itself is stored in the Web
server 11. This image file represents the image having
the highest image quality. Printing of an image having
15 a very high image quality is possible at the server
system 10.

If error-page data is received at the client
computer 1, an error page is displayed on the display
unit of the computer 2 (step 42). If registration-
20 failure page data is received by the client computer 1,
a registration-failure page is displayed on the display
unit of the computer 2 (step 48). In either case, the
user of the client computer 1 becomes aware of the fact
that an image file failed to be registered with the
25 server system 10. If necessary, the user of the client
computer 1 executes processing again to register the
image information.

Figs. 17 to 20 are flowcharts illustrating

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processing for searching image files, and Figs. 21 to 28 illustrate examples of windows displayed on the display unit of the computer 2 of client computer 1.

When the main-menu page (see Fig. 13) is being
5 displayed on the display unit of the computer 2 of the client computer 1, the search area A6 is clicked by the user of the client computer 1, whereby a transition is made to image file search processing.

When the search area A6 on the main-menu page is
10 clicked, the user ID and data indicating a request for a file search page are transmitted from the image information storage unit 4 to the server system 10 (step 71).

The user ID and the data indicating the request for
15 the file search page are input to the image file processing unit 13 of the server system 10, whereupon the database controller 14 is controlled to search the user tables, which have been stored in the database 15, for a user table having the user ID transmitted from the
20 client computer 1. If the corresponding user table is found, the absence or presence of the privilege to access the search page stored in this user table is checked to confirm whether access to the search page is allowed or not (step 111).

25 If the client computer 1 has the privilege to access the search page ("OK" at step 112), search-page data is read out of the HTML file unit 12 and the data is then transmitted to the client computer 1 by the Web

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5 by the Web server 11 (step 113).

10 computer 1 ascertains that the client computer 1 does
not possess the search privilege.

15 computer 2 (step 73). The search page includes the
following areas and fields:

20 which the user believes are possessed by the image to be
found.

25 whether an image file that excludes an entered keyword
is to be searched, and for displaying the search
conditions that have been specified. The first search
condition display areas A25 - A28 are provided in

association with the keyword display fields A21 - A24, and the search conditions also are input in association with the respective keywords.

Second search condition display areas A29 - A32:

5 These are areas which, if a plurality of keywords have been entered, specify whether the plurality of keywords are to be searched under an AND condition or under an OR condition and display the search conditions that have been specified.

10 Clear area A33: This is an area clicked by the user of the client computer 1 when all entered keywords and search conditions are to be cleared.

Search start area A34: This is an area clicked by the user of the client computer 1 when registration of
15 image information with the server system 10 is to start.

When the search page is displayed on the display unit of the computer 2, keywords and search conditions are entered in the respective areas (step 74). The entered keywords and search conditions are stored
20 temporarily in the image information storage unit 4. Data representing the stored keywords and search conditions are read out of the image information storage unit 4 and transmitted to the server system 10 (step 75).

25 The data representing the keywords and search conditions is input to the image file processing unit 13, whereupon a user table having the user ID already transmitted from the client computer 1 is searched for

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display unit of the computer 2 (step 77). The window W6 of the search-result-list display page includes areas A35 to A37 in which thumbnail images are displayed and an area A38 in which keywords possessed by thumbnail
5 images are displayed in association with the thumbnail images. As will be described later, an "x" mark is displayed in a thumbnail-image display area with regard to a thumbnail image for which there is no access privilege (see area A37 in Fig. 23). Since thumbnail
10 images (as well as medium and large images) have been subjected to a format conversion so as to be displayable on the display unit of the computer 2 of the client computer 1, thumbnail-image files need not be subjected to a format conversion by the client computer 1 in order
15 to be displayed on its display unit.

When the window W6 (see Fig. 22) of the search-result-list display page is displayed the first time, nothing is displayed in the areas A35 to A37. By observing the keywords displayed in the area A38, the
20 user of the client computer 1 judges whether the thumbnail images specified by these keywords are necessary. If a thumbnail image is necessary, the desired area from among the areas A35 to A37 that corresponds to the keywords is clicked. When this is
25 done, a request to transmit the corresponding thumbnail image and data indicating the record number of this thumbnail image are transmitted from the client computer 1 to the server system 10 (step 79).

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The access table (Fig. 7) in which the transmitted record number has been stored is found from the database by the database controller 14. A user table (Fig. 3) containing the user ID already transmitted from the client computer 1 is found and the group number is read out. On the basis of the group number that has been read out, it is determined whether the group has the privilege to access the thumbnail-image file for which transmission has been requested (step 120). If the group number possesses any one of the privileges 1 to 4, access to the thumbnail image is allowed. If the group number possesses privilege 0, access to the thumbnail image is denied.

If the client computer 1 has access privilege ("OK" at step 121), the corresponding image folder is retrieved based upon the record number (step 122) and the thumbnail-image file is read out. The thumbnail-image file that has been read out is transmitted from the Web server 11 to the client computer 1 (step 123). If the client computer 1 does not have access privilege ("NG" at step 121), "x"-mark data is transmitted to the client computer 1 (step 124). As a result, thumbnail images (A35 and A36 in Fig. 23) for which there is access privilege and an "x" mark (area A37 in Fig. 23) indicating that there is no access privilege are displayed in the window W6 of the search-result-list display page being displayed on the display unit of the computer 2.

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If a thumbnail image being displayed in the window W6 of the search-result-list display page is clicked by the user of the client computer 1 ("YES" at step 82), a window for entering the user name and the group name to which the user belongs is displayed on the display unit of the computer 2. The user enters the user name and the group name (step 83). The user name and the user ID are read out by the computer 2. The record number of the image folder containing the user ID, the group name and the thumbnail-image file that has been clicked is transmitted from the image information storage unit 4 to the server system 10 (step 84).

On the basis of the user ID and record number, the database 15 in the server system 10 is searched and the corresponding user table is found. On the basis of privilege to access a detailed-information page that has been stored in this user table, whether the client computer 1 is capable of accessing the detailed-information page is checked (step 125).

If the client computer 1 does not have the privilege to access the detailed-information page ("NG" at step 126), error-page data is transmitted to the client computer 1 (step 128). If the client computer 1 does have the privilege to access the detailed-information page ("OK" at step 126), data representing a detailed-information display page is transmitted from the server system 10 to the client computer 1 (step 127).

When the error-page data is received at the client computer 1, an error-page window is displayed on the display unit of the computer 2 (step 86). By observing the error-page window, the user of the client computer 1 becomes aware of the fact that he or she does not possess the privilege to obtain detailed information regarding the thumbnail image requested. When the data representing the detailed-information display page is received by the client computer 1, a detailed-information display-page window W7 of the kind shown in Fig. 24 is displayed on the display unit of the computer 2 (step 85).

The detailed-information display-page window W7 includes the following areas:

Medium-image display area A41: This is an area which displays a medium image represented by a medium-image file possessing a greater quantity of data than the thumbnail-image file. A medium image is not displayed in the area A41 the first time the detailed-information display-page window W7 is displayed.

Owner display area A42: This is an area which displays the name of the owner of the original image (the person who registered the original image) of a thumbnail image for which detailed information has been requested.

Keyword display area A43: This is an area which displays corresponding keywords.

Attachment-file display area A44: When an

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original-image file corresponding to a medium-image file has an attachment file, the name of this attachment file is displayed in this area.

Original-image download area A45: This is an area
5 clicked by the user of the client computer 1 when an original-image file is to be downloaded.

Attachment-file download area A46: This is an area clicked by the user of the client computer 1 when an attachment file is to be downloaded.

10 When a medium-image file is downloaded, the user of the client computer 1 clicks the medium-image display area A41 (step 87), whereupon data representing a request for the medium image is transmitted from the client computer 1 to the server system 10 (step 88).

15 The server system 10 refers to the access table based upon the group number that has already been transmitted from the server system 10 and checks to see whether the client computer 1 has the privilege to access the medium image (step 129). If the number of
20 the group to which the client computer 1 belongs has access privilege 2, 3, or 4, the client computer 1 is privileged to access the medium image. If the number of the group to which the client computer 1 belongs has access privilege 0 or 1, the client computer 1 does not
25 have privilege to access the medium image.

If the client computer 1 has access privilege ("OK" at step 130), reference is had to the record number, the image folder is found from the image file unit 17 and

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the medium-image file that has been stored in this image folder is read out. The medium-image file that has been read out is transmitted to the client computer 1 by the Web server 11 (step 132). If the client computer 1 does
5 not possess access privilege ("NG" at step 130), data indicative of the "x" mark is transmitted to the client computer 1 (step 131).

When data indicative of the "x" mark is transmitted from the server system 10, the "x" mark is displayed in
10 the medium-image display area A41 of the detailed-information display-page window W7 being displayed on the display unit of the computer 2 of client computer 1 (step 90; see Fig. 25). When the medium-image file is transmitted from the server system 10, the medium image
15 is displayed in the medium-image display area A41 of the detailed-information display-page window W7 being displayed on the display unit of the computer 2 (step 89; see Fig. 26).

When a large image is necessary, the medium image
20 being displayed in the medium-image display area A41 is clicked ("YES" at step 91). When this is done, a window for entering the user name and group name is displayed on the display unit of the computer 2. The user enters the user name and group name (step 92). The user ID
25 corresponding to the entered user name is read out of the computer 2 and the user ID, group name and corresponding record number are transmitted from the client computer 1 to the server system 10 (step 93).

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The database 15 in the server system 10 is searched and the access table having the transmitted record number is found. Whether or not access to a large image is allowed is verified based upon the access table (step 133). If the record number of the client computer 1 has privilege 3 or 4, the client computer 1 is allowed to access the large image. If the record number of the client computer 1 has privilege 0, 1 or 2, the client computer 1 is denied access to the large image.

10 If access to the large image is allowed ("OK" at step 134), the large-image file contained in the image folder identified by the record number is read out and the file is then transmitted to the client computer 1 by the Web server 11 (step 136). If access to the large
15 image has been denied ("NG" at step 134), data indicative of the "x" mark is transmitted to the client computer 1 (step 135).

If the large-image file is transmitted to the client computer 1, a large image of the kind shown in
20 Fig. 28 is displayed on the display unit of the computer 2 (step 94). Since the user of the client computer 1 can thus obtain a large image having a high resolution, a high-quality image can be printed by the user. If data indicative of the "x" mark is transmitted to the
25 client computer 1, a window showing the "x" mark of the kind illustrated in Fig. 27 is displayed on the display unit of the computer 2 (step 95). The user of the client computer 1 thus ascertains that he or she does

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not have the privilege to access the large image.

If the original-image download area A45 or attachment-file download area A46 of the detailed-information display page is clicked, this signifies a request for an original-image file or attachment file (step 96). A window for entering the user name and group name is again displayed on the display unit of the computer 2. The user name and group number are entered by the user (step 98). The user ID is found from the user name and the data representing the user ID and group name is sent to the server system 10 (step 99).

Whether or not access to an original image or attachment file is allowed is verified by the server system 10 (step 137). More specifically, when the user ID and group name are received by the server system 10, the user table identified by this user ID is found. Reference is had to the binary-access privilege of the user table to check whether binary-access privilege has been granted or not. If binary-access privilege has been granted, the downloading of the attachment file is allowed. If there is a request to download an original-image file, reference is had also to the access table to check the access privilege of the group to which the client computer 1 belongs. If the access privilege of the group to which the client computer 1 belongs is 4, then access to the original-image file is granted. If the access privilege is not 4, then access to the original-image file is denied.

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If access has been allowed ("OK" at step 138), the original-image file or attachment file contained in the image folder of the record number that has already been transmitted to the server system 10 is read out of the image file unit 17. The file that has been read out is transmitted to the client computer 1 by the Web server 11 (step 140). If access has been denied ("NG" at step 138), error-page data is transmitted to the client computer 1 (step 139).

When the original-image file or attachment file is transmitted from the server system 10, a window indicating that downloading is in progress is displayed on the display unit of the computer 2 (step 100). If error-page data is transmitted from the server system 10, an error-page window is displayed (step 101). By observing the error page, the user of the client computer 1 thus ascertains that he or she does not have the privilege to access the original-image file or attachment file.

In the embodiment described above, a keyword is transmitted from the client computer 1 to the server system 10 and an image file conforming to the keyword is searched for in the server system 10. An image file found as a result of the search is transmitted from the server system 10 to the client computer 1. When the user of the client computer 1 knows the record number that corresponds to an image file to be downloaded, the record number may be transmitted from the client

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computer 1 to the server system 10. The image file contained in the image storage folder identified by the record number is transmitted from the server system 10 to the client computer 1.

5 (2) Second embodiment

Fig. 29 is a block diagram showing the electrical structure of a server system according to a second embodiment of the present invention. Components in Fig. 29 identical with those shown in Fig. 2 are designated 10 by like reference characters and need not be described again.

A plurality of client computers (three in this case) 1A, 1B and 1C are connected to a server system 10A via a network so as to be capable of communicating with 15 the server system.

The server system 10A shown in Fig. 29 includes an image receiver group 300 in order to receive original-image data transmitted from the client computers 1A, 1B, 1C, etc. The image receiver group 300 includes three 20 image receiving units 301, 302 and 303, which correspond to the number of client computers 1A, 1B, 1C capable of communicating with the server system 10A. The image receiving units 301, 302 and 303 include respective ones of primary memories for temporarily storing original- 25 image data that has been transmitted from the client computers 1A, 1B and 1C.

Original-image data that has been transmitted from the client computer 1A is received by the first image

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Fig. 30 shows an example of a window displayed on a display unit included in each client computer. Fig. 30

The image-information input window Wi4 shown in Fig. 30 includes a format-conversion designating area A18. The latter is an area which the user of the client computer clicks using a mouse or the like when original-image data is to be converted to a predetermined specific format [NSK-TIFF (Nihon Shimbun Kyokai - Tag Image File Format) in this example] in the server system 10A. It goes without saying that the format conversion is carried out by the format converter 306.

The image-information input window Wi4 includes a field A19 for setting the color adjustment level. The user of the client computer enters the color adjustment level in field A19 using a keyboard, for example. The color adjustment levels are from 1 to 7. Level 1 specifies color adjustment of a thumbnail image, level 2 color adjustment of a medium image, level 3 color adjustment of a thumbnail image and intermediate image, level 4 color adjustment of a large image, level 5 color adjustment of an thumbnail image and large image, level

described again.

As mentioned above, the image-information input window Wi4 shown in Fig. 30 is displayed on the display unit of the client computer (step 41) and various items of image information are entered. (It is assumed here that the format conversion area A18 has been checked and that the field for the color adjustment level has been set to level 7.)

Binary-file transmission limiting size data which indicates the quantity of data that can be transmitted to the server system 10A is transmitted from the server system 10 to the client computer that is accessing the server system 10A (step 211). Further, the user ID of the client computer for which the record number has been updated and which is accessing the server system 10A is acquired in the Web server 11 of the server system 10A (step 212). A request for image transmission is received from the client computer (step 213).

When the request for image transmission is received, the corresponding image receiving unit in the image receiver group 300 is provided with the record number and user ID from the Web server 11 and a reception request is issued to the image receiving unit (step 214). When the reception request is accepted from the Web server 11, the image receiving unit executes processing to receive an original-image file in an amount equivalent to the limited size. The details of this reception processing will be described later. When

the processing for receiving the original-image file ends, the record number and user ID are supplied to the Web server 11 from the image receiving unit (step 215).

The binary-file transmission limiting size data
5 that has been transmitted from the server system 10A is received by the client computer (step 200), whereupon the data quantity of the binary file capable of being transmitted from the client computer to the server system 10A is displayed on the display unit of the
10 client computer. By observing the data quantity displayed on the display unit, the user of the client computer can tell the quantity of data that can be transmitted to the server system 10A.

When image information enters the client computer 1
15 (step 44) and database registration information is transmitted to the server system 10A (step 45), the original-image data in the amount equivalent to the size limited on the side of the server system is transmitted from the client computer to the server system 10A (step
20 46A). When original-image data of an amount in excess of the limited size is transmitted from the client computer to the server system 10A, the original-image data to be transmitted is split into portions the size of each of which is less than the limited size. The
25 original-image data thus split is transmitted to the server system 10A over several cycles and is reconstructed into the original-image data in the server system 10A.

When the entire transmission of the original-image
10 file is completed, an attachment file is transmitted
from the client computer to the server system 10A in
data quantities of the limited size in a manner similar
to that in which the original-image file was transmitted
(steps 47A, 203, 204).

15 When the reception of the original-image file and
attachment file at the server system 10A is completed in
its entirety and the record number and user ID are
provided by the image receiving unit, the record number,
the user ID, a format conversion flag (if the area A18
20 in the image-information input window Wi4 is checked, a
format conversion flag is transmitted from the client
computer to the server system 10A) and data representing
the color adjustment level (the data representing the
color adjustment level is transmitted from the client
25 computer to the server system 10A by entering the color
adjustment level in field A19 of the image-information
input window Wi4) are supplied from the Web server 11 to
the image-file registration unit 304 (step 216). When

this is done, the image-file registration unit 304 executes image-file registration processing. The details of image-file registration processing in the image-file registration unit 304 will be described later. When image-file registration processing by the image-file registration unit 304 ends, the image-file registration unit 304 provides the Web server 11 with the record number and user ID (step 217). The database registration information is thenceforth registered in the database 15 in the manner described above (step 218).

Fig. 34 is a flowchart of processing executed by the image receiving unit to receive an original-image file and an attachment file.

As mentioned above, the image receiving unit is provided with a record number and user ID by the Web server 11 (step 221). The client computer transmits an original-image file having the data quantity of the limited size for this client computer, and the original-image file is received by the image receiving unit (step 222). The received original-image file of the limited size is stored temporarily in the primary memory contained in the image receiving unit. The temporarily stored original-image file is read out of the image receiving unit and stored by the image-file registration unit 304 in the temporary storage folder of the image file unit 17 (step 223). Since the primary memory of the image receiving unit is emptied when this done ("NO"

at step 224), a request for transmission of the next original-image file is transmitted to the client computer (step 225). Upon receiving the transmission request, the client computer responds by sending the
5 server system 10A an original-image file having the data quantity of the limited size.

An attachment file also is transmitted from the client computer to the server system in data quantities of the limited size in a manner similar to that of the
10 original-image file. The attachment file of the limited size is received by the image receiving unit and is stored temporarily in the primary memory (step 226). The attachment file stored temporarily in the image receiving unit is read out and is stored temporarily by
15 the image-file registration unit 304 in the temporary storage folder of the image file unit (step 227). If there is a next attachment file ("NO" at step 228), a transmission request for this file is sent from the image receiving unit to the client computer (step 229).

20 If all original-image files and attachment files to be transmitted from the client computer are received by the image receiving unit and these are stored in the temporary storage folder of the image file unit 17, the Web server is provided with the record number and user
25 ID by the image receiving unit (step 230).

Fig. 35 is a flowchart illustrating the procedure of image-file registration processing executed by the image-file registration unit 304.

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A user ID, record number, file conversion flag and color adjustment level provided by the image receiving unit are registered in the FIFO memory 305 (step 241). The oldest user ID, record number, file conversion flag and color adjustment level among the user IDs, record numbers, file conversion flags and color adjustment levels that have been registered in the FIFO memory 305 are then read out of the memory and updated (step 242).

If the FIFO memory 305 is not empty ("NO" at step 243), this indicates that image data not yet processed resides in the image-file registration unit 304. Processing described below is executed in the order of the user IDs that have been registered in the FIFO memory 305.

First, it is determined whether the file conversion flag is on (step 244). If the area A18 on the image-information input page has been checked by the user of the client computer, this means that the file conversion flag is on. If the file conversion flag is on, the original-image file that has been transmitted from the client computer and stored in a folder specified by the record number is read out of the image file unit 17. The original-image file read out is converted to the specific NSK-TIFF format (step 245). A specific image file is generated by the format conversion. The generated specific image file is stored in the same folder as that storing the original-image file that has been read out.

It is determined whether the color adjustment level is 1 or greater (step 249). If the color adjustment level is 1 or greater, this indicates that the user of the client computer has made a setting so as to apply a color adjustment to at least one image among the large, medium and thumbnail images.

20 When the above-described format conversion and
color adjustment processing end, the image-file
registration unit 304 provides the Web server 11 with
the user ID and record number (step 256). Subsequently
using the user ID and record number makes processing
25 possible in the Web server 11.

The quantity of data capable of being transmitted to the server system 10A is allocated beforehand in the server system 10A in accordance with the client computer

that is capable of accessing the server system 10A. This makes it possible to prevent an accident in which only a specific client computer can access the server system 10A to the exclusion of other client computers.

5 Further, since a specific image file having a predetermined specific format is generated, a client computer that requires an image file having the specific format can obtain the image file having the required format merely by downloading the specific image file
10 from the server system 10A. This obviates format conversion labor on the side of the client computer.

 A window W9 of the kind shown in Fig. 36 is displayed on the display unit of the client computer to make it possible to download such a specific image file
15 to the client computer. By clicking the original-image download area A45 when the window illustrated in Figs. 24 to 26 is being displayed, the user causes the window W9 to be displayed on the display unit.

 The window A9 includes an area A61 clicked by the
20 user when an original-image file is to be downloaded, an area A62 clicked by the user when an NSK-TIFF file (the specific image file) is to be downloaded, an area A63 clicked by the user when a large-image file is to be downloaded, and an "OK" area A64 for verifying the area
25 checked.

 One or a plurality of the areas A61, A62 and A63 can be checked. The image file designated by the checked area would be read out of the image file unit 17

of server system 10A and transmitted to the client computer.

Since color adjustment processing is carried out, an image having excellent color reproducibility can be
5 obtained.

(3) Third embodiments

Figs. 37 to 48 illustrate a third embodiment of the present invention.

Fig. 37 illustrates the overall configuration of an
10 image data communication system according to the third embodiment.

An image transmitting unit 320 and an image database server 330 are connected via a network such as the Internet so as to be capable of communicating with
15 each other. As will be described later, an image file obtained by image sensing using a digital camera 310 is applied to the image transmitting unit 320. The image file is transmitted from the image transmitting unit 320 to the image database server 330.

20 Client computers 1 capable of communicating with the image database server 330 also is connected to the network.

Fig. 38 is a block diagram showing the electrical structures of the digital camera 310, image transmitting
25 unit 320, image database server 330 and client computer 1. Components in Fig. 38 that are identical with those of the client computer and server system of the first embodiment are designated by like reference characters

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and need not be described again. The client computers 1
of the first embodiment correspond to the client
computers 1 in the third embodiment, and the server
system of the first embodiment corresponds to the image
5 database server 330 in the third embodiment.

The digital camera 310 includes an image input unit
312 for sensing the image of a subject and outputting
image data representing the image of the subject, a
processing unit 313 for executing predetermined signal
10 processing such as data compression and a gamma
correction based upon the image data output from the
image input unit 312, and an image recording unit 314
for recording the image data, which has been subjected
to signal processing by the processing unit 313, on a
15 recording medium 305. The processing unit 313 has an
internal timer 313A for measuring the time and date.

The digital camera 310 includes an interface 311
through which it is capable of being connected to a GPS
(Global Positioning System) receiving unit 301 and bar
20 code reader 302.

Position information is obtained by the GPS
receiving unit 301 and data representing the position
information is stored in an image file together with the
image data. When a bar code is read by the bar code
25 reader 302, data representing the bar code is applied to
the image transmitting unit 320 and stored in the image
file. The details of this processing will be described
later.

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Fig. 39 is a diagram showing the structure of an image file generated by the digital camera.

The image file includes an image-format header for managing the overall image file, an additional-information area for recording additional information, and an image-data recording area for recording image data.

Recorded in the additional-information recording area are bar-code data representing a bar code that has been read by the bar code reader 302, data representing date of photography and position information representing the location of photography sensed by the GPS receiving unit 301.

The image-format header contains the size of the image data that has been recorded in the image-data recording area, the number of horizontal-direction pixels of the image represented by the image data, the number of vertical-direction pixels of the image represented by the image data, the offset (path) to the image data, a position-information flag indicating the absence or presence of position information (GPS information), a bar-code flag indicating the absence or presence of bar-code data, an offset (path) to the position information, the data size of position information, an offset to the bar-code data, the size of the bar-code data, an offset to the date of photography and the size of the date-of-photography data.

Figs. 40 to 42 illustrate an example of the structure of the database 15 contained in the image database server 330.

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Fig. 40 is a product information table.

The product information table is stored in the database 15 in advance by the operator of the image database server 330 before image data included in an image file transmitted from the image transmitting unit 320 is stored in the image file unit 17.

The product information table includes an area for storing a bar-code number, an area for storing a product name (FinePix 700), and an area for storing product information (product information 1 indicates a digital camera, product information 2 indicates the price and product information 3 indicates inventory) concerning the product name. By specifying the bar-code number, a product name and product information can be searched by referring to the product information table.

Fig. 41 is an image table.

The image table links a bar-code number and image data.

The image table includes an area which stores an image index for identifying image data, an area for storing a bar-code number, an area for storing date of photography and an area for storing position information. By knowing the bar-code number, it is possible to find image data identified by this bar-code number, the date of photography of the image represented by this image data and position information representing the location at which the image was captured.

Fig. 42 illustrates an index management database.

An image index is attached to each item of image data and is used to identify the image data. The index management database has an area for storing the current image index and an area for storing the next image index. The index management database makes it possible to prevent the assignment of redundant image indices to image data.

Figs. 43 to 45 are flowcharts illustrating processing procedures for when image data is recorded in the image database server 330.

Fig. 43 is a flowchart illustrating the procedure of processing executed by the digital camera 310.

An image of interest (generally a product to which a bar-code number has been assigned) is sensed by the image input unit 312 to obtain image data representing the image of interest (step 331). The image data representing the image of interest is input to the processing unit 313, where the image data is stored temporarily.

20 A bar code corresponding to the image of interest
is read by the bar code reader 302 (step 332). Data
representing the bar code is input to the digital camera
310 via the interface 311 and the data is applied to the
processing unit 313. The date and time of photography
25 is read from the timer 313A included in the processing
unit 313 (step 333).

The digital camera 310 and GPS receiving unit 301 are connected. Position information obtained by the GPS

receiving unit 301 is read by the processing unit 313 of the digital camera 310 via the interface 311 (step 334).

The image data is recorded in the image-data recording area of the image file in the processing unit 5 313, and the photography date-and-time data and position information are stored in the additional-information recording area of the image file (step 335). The image file is recorded by the image recording unit 314 on the recording medium 305 that has been inserted 10 into the digital camera 310 (step 336).

Fig. 44 illustrates the procedure of processing executed by the image transmitting unit 320.

The recording medium 305 on which an image file has been recorded in accordance with the processing shown in 15 Fig. 43 is inserted into the image transmitting unit (step 341). The image file is read out of the recording medium 305 and stored temporarily in the file transmitter 322.

The image database server 330 that is to be sent 20 the image file is designated by the operator of the image transmitting unit 320 using the file transmitter 322 and this designation is applied (step 342).

When a connection is set up between the image database server 330 that is to be sent the image file 25 and the image transmitting unit 320 (step 343), the image file is transmitted to the image database server 330 by the file transmitter 322 (step 344).

Fig. 45 illustrates the procedure of processing

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Figs. 46 and 47 are flowcharts illustrating the procedure of processing for conducting a search of image

If the image data, date and time of photography,
position information, product name and product

The data representing the image data, date and time of photography, position information, product name and product information is received by the client computer 1 (step 364), whereupon a window W10 of search results of the kind shown in Fig. 48 is displayed (step 365).

By reading the bar code, the user of the client computer 1 is not only capable of obtaining product information represented by the bar code but can also view the image of the product, the date and time of photography, etc.

25 As many apparently widely different embodiments of
the present invention can be made without departing from
the spirit and scope thereof, it is to be understood
that the invention is not limited to the specific

embodiments thereof except as defined in the appended claims.

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WHAT IS CLAIMED IS:

1. An image data communication system in which a plurality of client computers and a server system are capable of communicating with each other via a network,
- 5 wherein one of said client computers includes:
 - an original-image data specifying unit for specifying original-image data that is to be transmitted to said server system; and
 - an original-image data transmitting unit for
- 10 transmitting the original-image data, which has been specified by said original-image data specifying unit, to said server system; and
- said server system includes:
 - an original-image data receiving unit for receiving
- 15 the original-image data transmitted from said original-image data transmitting unit;
- an image data generating unit, which responds to receipt of the original-image data by said original-image data receiving unit, for generating reduced-data-
- 20 quantity image data of two stages representing at least two images possessing data quantities of at least two stages in each of which the quantity of data is less than that of the original-image data; and
- a unit for associating the original-image data,
- 25 which has been received by said original-image data receiving unit, and the reduced-data-quantity image data that has been generated by said image data generating unit.

2. The system according to claim 1, wherein said server system further includes a specific-format image data generating unit for generating image data having a predetermined specific data format that is independent of the data format of the original-image data.
3. The system according to claim 1, wherein said image data generating unit generates reduced-data-quantity image data of a prescribed format that is independent of the data format of the original-image data.
4. The system according to claim 1, wherein said server system further includes a memory in which the quantity of original-image data that can be stored is allocated beforehand to each client computer, said memory storing temporarily the original-image data that has been received by said original-image data receiving unit;
- said original-image data transmitting unit of said client computer sending said server system the original-image data having a data quantity less than the quantity of data allocated beforehand.
5. The system according to claim 4, wherein said server system further includes a data-quantity information transmitting unit for sending said client computer information representing a pre-allocated data quantity capable of being stored in said memory;
- said original-image data transmitting unit of said client computer sending said server system the original-image data having a data quantity less than the quantity of data allocated beforehand based upon said

information, which represents the data quantity,
transmitted from said data-quantity information
transmitting unit of said server system.

6. The system according to claim 1, wherein said server
5 system further includes a storage unit for storing the
original-image data and the reduced-data-quantity image
data of two stages.

7. The system according to claim 1, wherein said server
system further includes a color adjustment unit for
10 applying color adjustment processing to at least one
item of image data among the original-image data and
reduced-data-quantity image data of two stages.

8. The system according to claim 1, wherein said client
computer further includes:

15 a data specifying unit for specifying image data
that is to undergo color adjustment among the original-
image data and reduced-data-quantity image data of two
stages; and

a specifying-data transmitting unit for sending
20 said server system specifying data which represents the
image data that has been specified by said data
specifying unit; and

said server system further includes a specifying-
data receiving unit for receiving the specifying data
25 that has been transmitted from said specifying-data
transmitting unit of said client computer;

said color adjustment unit applying color
adjustment processing to image data, which has been

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specified by said specifying data received by said specifying-data receiving unit, among the original-image data and reduced-data-quantity image data of two stages.

9. The system according to claim 6, wherein said client

5 computer further includes a transmission requesting unit for sending said server system a request to transmit at least one item of image data among the original-image data and reduced-data-quantity image data of two stages that has been stored in said storage unit; and

10 said server system further includes:

a transmission-request receiving unit for receiving the transmission request transmitted from said transmission requesting unit of said client computer;

a first reception-privilege determination unit for
15 determining whether the privilege to receive image data specified by the transmission request received by said transmission-request receiving unit resides with the client computer that issued the transmission request; and

20 a data transmitting unit, which is responsive to a determination by said first reception-privilege determination unit to the effect that the privilege resides with said client computer, for reading the image data specified by the transmission request out of said
25 memory unit and transmitting this image data to said client computer, and which is responsive to a determination by said first reception-privilege determination unit to the effect that the privilege does

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not reside with said client computer, for sending said client computer data indicating that transmission is not allowed.

10. The system according to claim 6, wherein said
5 server system further includes an end-message transmitting unit, which is responsive to storage of the original-image data and the reduced-data-quantity image data of two stages in said storage unit, for transmitting a message indicative of end of storage to
10 said client computer that transmitted the original-image data.

11. The system according to claim 6, wherein said client computer further includes:

an image search-condition input unit for inputting
15 image search conditions; and
an image search-condition transmitting unit for sending said client computer the image search conditions that have been input from said image search-condition input unit; and

20 said server system further includes:

an image search-condition receiving unit for receiving image search conditions that have been transmitted from said image search-condition transmitting unit;

25 a search unit for searching, on the basis of the image search conditions received by said image search-condition receiving unit, at least one item of data among the original-image data and the reduced-data-

quantity image data of two stages stored in said storage unit; and

5 a search-result information transmitting unit for sending said client computer information relating to results of the search conducted by said search unit.

12. The system according to claim 11, wherein said server system further includes a second reception-privilege determination unit for determining whether the privilege to receive image data, which has been found as
10 a result of the search conducted by said search unit, resides with said client computer;

said search-result information transmitting unit, in response to a determination by said second reception-privilege determination unit to the effect that the
15 reception privilege resides with said client computer, sending said client computer the image data found as a result of the search conducted by said search unit.

13. The system according to claim 1, wherein said client computer further includes an image display unit
20 for displaying an image representing by image data of a prescribed format; and

said server system further includes a format conversion unit for converting the original-image data that has been received by said original-image data
25 receiving unit to a format that is capable of being displayed by said image display unit;

said image data generating unit generating the reduced-data-quantity image data having a format that is

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image data, reduced-data-quantity image data of two stages representing at least two images possessing data quantities of at least two stages in each of which the quantity of data is less than that of the original-image

5 data; and

associating the original-image data that has been received and the reduced-data-quantity image data that has been generated.

18. An image database registration method comprising
10 the steps of:

inputting an image file which includes an additional-information recording area in which additional information has been recorded and an image-data recording area in which image data representing an
15 image has been recorded;

reading the additional information that has been recorded in the additional-information recording area included in the image file that has been input;

20 reading the image data that has been recorded in the image-data recording area included in the image file that has been input; and

storing the additional information that has been read and the image data that has been read in a storage unit in association with each other.

25 19. An image database search method comprising the steps of:

storing additional information, which has been recorded in an additional-information recording area of

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an image file, and image data, which has been recorded in an image-data recording area of the image file, in a storage unit in association with each other;

inputting additional information;

- 5 on the basis of the additional information that has been input, retrieving the corresponding image data from said storage unit; and

outputting image data that has been found by retrieval.

- 10 20. A recording medium storing a program for controlling a server system capable of communicating with a client computer via a network, said program controlling a computer of the server system so as to:

receive original-image data that has been sent;

- 15 generate, in response to receipt of the original-image data, reduced-data-quantity image data of two stages representing at least two images possessing data quantities of at least two stages in each of which the quantity of data is less than that of the original-image
20 data; and

associate the original-image data that has been received and the reduced-data-quantity image data that has been generated.

21. A computer-readable recording medium storing a
25 program for registering image data in an image database, said program controlling a computer of the image database so as to:

input an image file which includes an additional-

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information recording area in which additional information has been recorded and an image-data recording area in which image data representing an image has been recorded;

5 read the additional information that has been recorded in the additional-information recording area included in the image file that has been input;

 read the image data that has been recorded in the image-data recording area included in the image file

10 that has been input; and

 store the additional information that has been read and the image data that has been read in a storage unit in association with each other.

22. A computer-readable recording medium storing a

15 program for searching image data that has been registered in an image database, said program controlling a computer of the image database so as to:

 input additional information;

 on the basis of the additional information that has
20 been input, retrieve the corresponding image data from a storage unit in which additional information, which has been recorded in an additional-information recording area of an image file, and image data, which has been recorded in an image-data recording area of the image
25 file, have been stored in association with each other;
 and

 output image data that has been found by retrieval.

ABSTRACT OF THE DISCLOSURE

Original images, large images, medium images and thumbnail images are registered with a server system. An original-image file is transmitted from a client
5 computer to the server system. The server system converts the format of the original-image file to generate a large-image file, generates a medium-image file, in which the quantity of data is less than that of the large-image file, from the large-image file, and
10 generates a thumbnail-image file, in which the quantity of data is less than that of the medium-image file, from the medium-image file. The original-image file, large-image file, medium-image file and thumbnail-image file are placed on one folder and stored in an image file
15 unit. After the folder containing the original-image file, etc., has been stored in the image file unit, the user of a client computer having access privileges is capable of accessing files such as the large-image file.

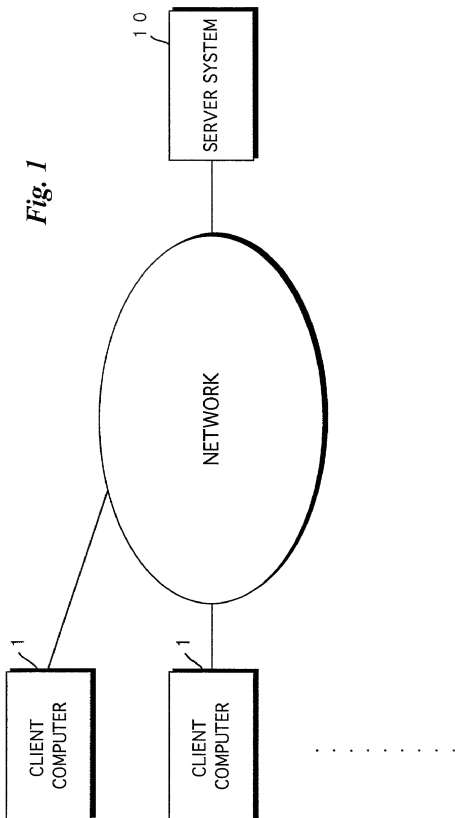


Fig. 2

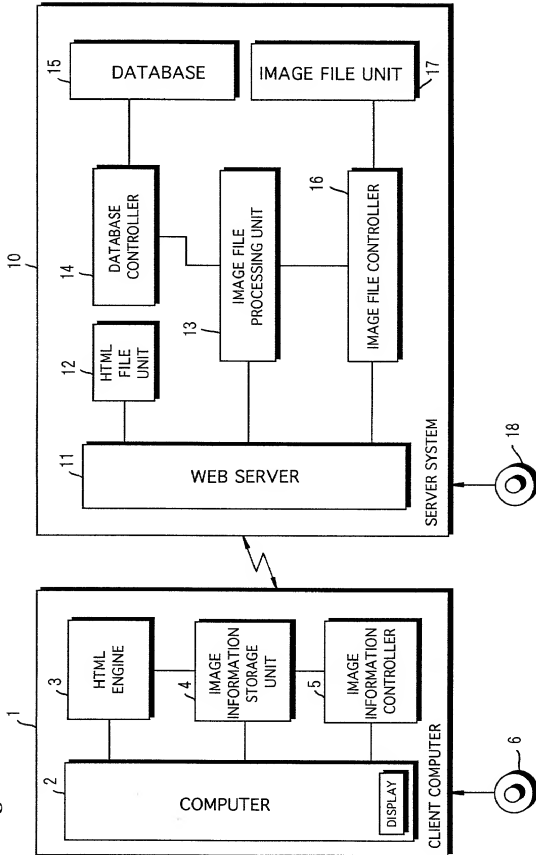


Fig. 3

USER TABLE	
User ID	USER ID
Group ID	GROUP NO.
UserName	USER NAME
Password	PASSWORD
EntryOK	PRIVILEGE TO ACCESS REGISTRATION PAGE (True/False)
SearchOK	PRIVILEGE TO ACCESS SEARCH PAGE (True/False)
ResultOK	PRIVILEGE TO ACCESS PAGE DISPLAYING LIST OG SEARCH RESULTS (True/False)
DetailOK	PRIVILEGE TO ACCESS DETAILED-INFORMATION PAGE (True/False)
BinaryOK	BINARY-ACCESS PRIVILEGE (True/False)

Fig. 4

NEXT-ID TABLE	
CurrentID NextID	CURRENT RECORD NO. NEXT RECORD NO.

Fig. 5

GROUP-ID TABLE	
GroupID GroupName	GROUP NO. GROUP NAME

Fig. 6

DATA TABLE	
RecordID	RECORD NO.
OwnerID	OWNER ID
NumOfBinary	NUMBER OF ATTACHMENT FILES
ImageInfo1	KEYWORD 1
ImageInfo2	KEYWORD 2
ImageInfo3	KEYWORD 3
ImageInfo4	KEYWORD 4

Fig. 7

ACCESS TABLE	
RecordID	RECORD NO.
AccessID0	GROUP NO. HAVING PRIVILEGE 0
AccessID1	GROUP NO. HAVING PRIVILEGE 1
AccessID2	GROUP NO. HAVING PRIVILEGE 2
AccessID3	GROUP NO. HAVING PRIVILEGE 3
AccessID4	GROUP NO. HAVING PRIVILEGE 4

Fig. 8

BINARY TABLE	
RecordID	RECORD NO.
OwnerID	OWNER ID
BinaryNum	BINARY-FILE NO.
FileName	FILE NAME
ByteSize	BYTE SIZE OF BINARY FILE

Fig. 9

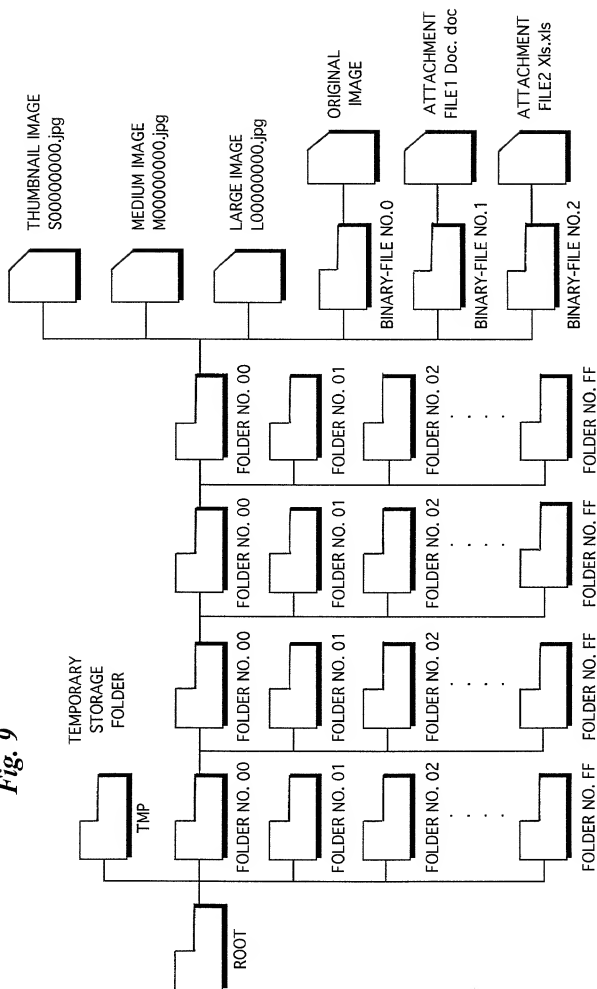


Fig. 10

DISPLAY OF MAIN-MENU PAGE

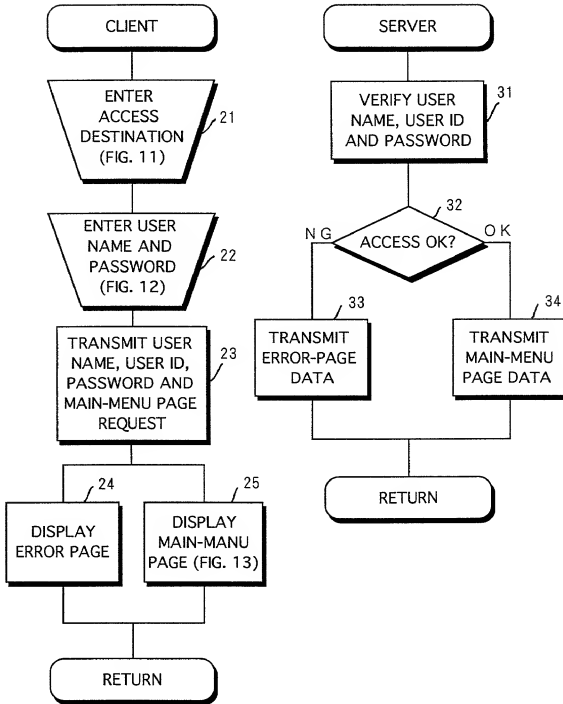


Fig. 11

W 1

ENTER ACCESS DESTINATION

A 1

A 2

Fig. 12

W 2

SYSTEM LOG-IN

USER NAME

PASSWORD

A 3

A 4

A 2

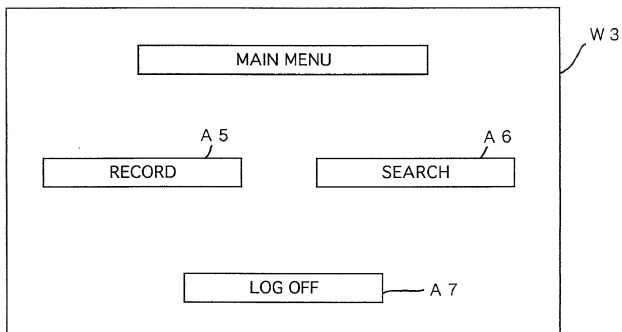
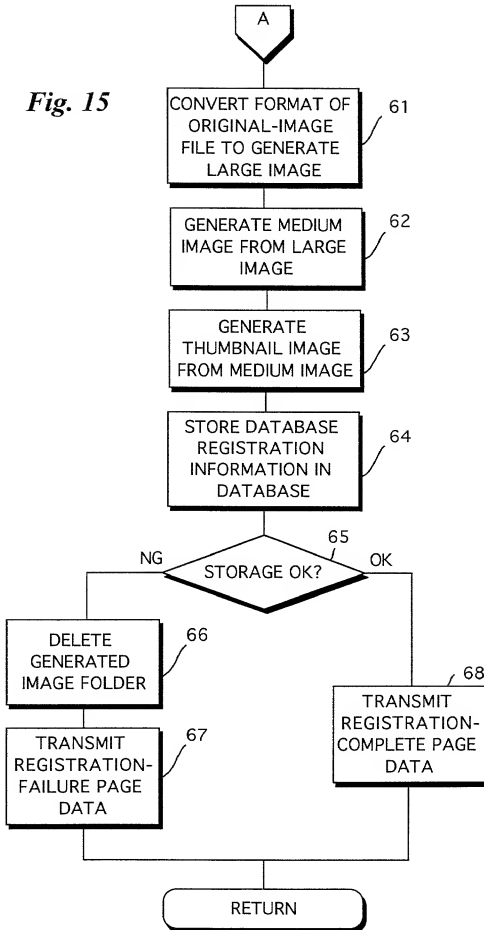
Fig. 13

Fig. 15



SEARCH IMAGE FILES

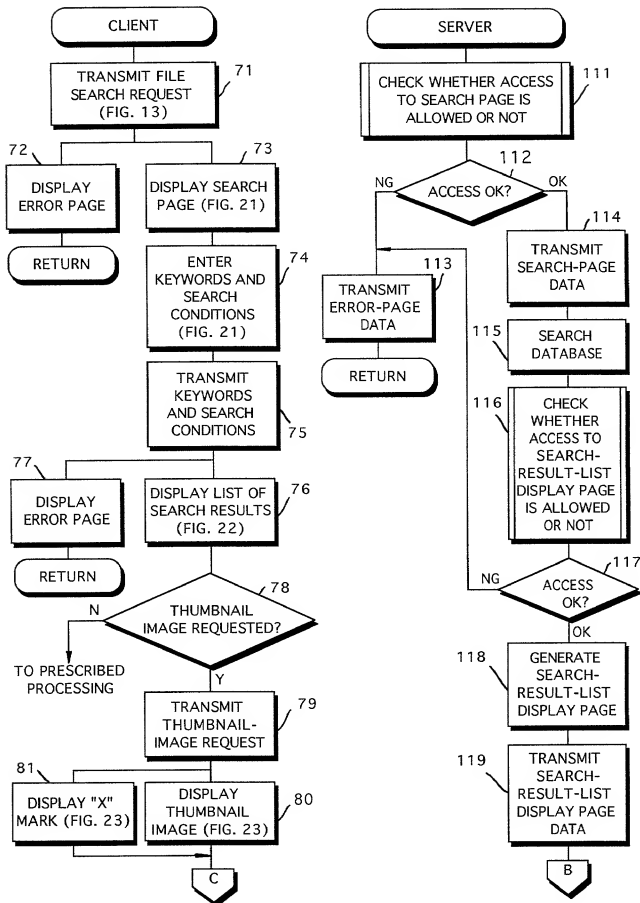
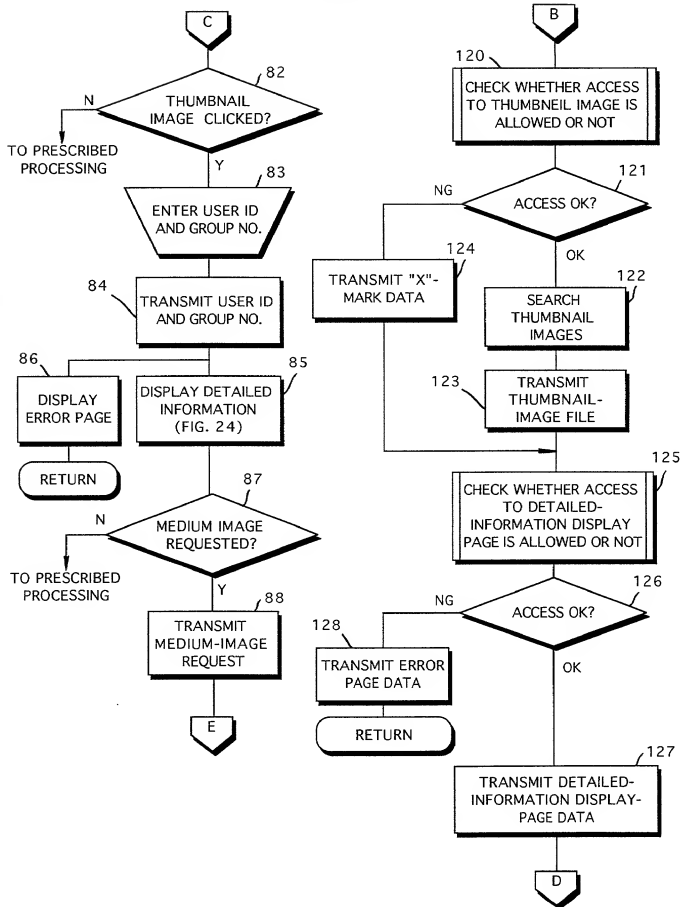
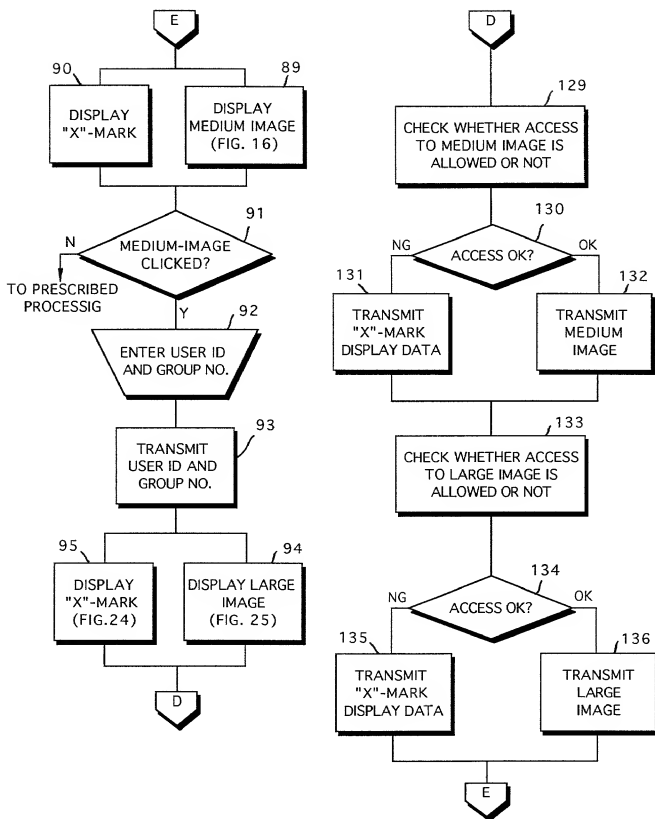


Fig. 18



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Fig. 19



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Fig. 20

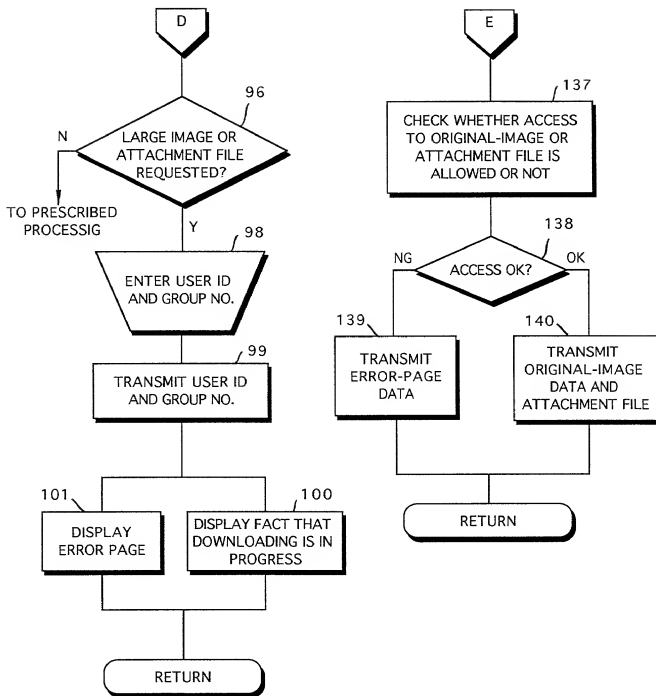


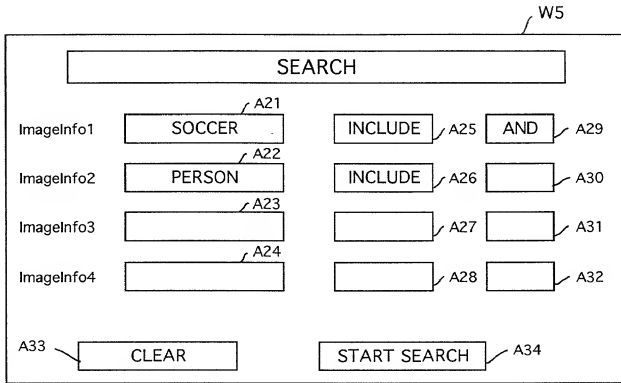
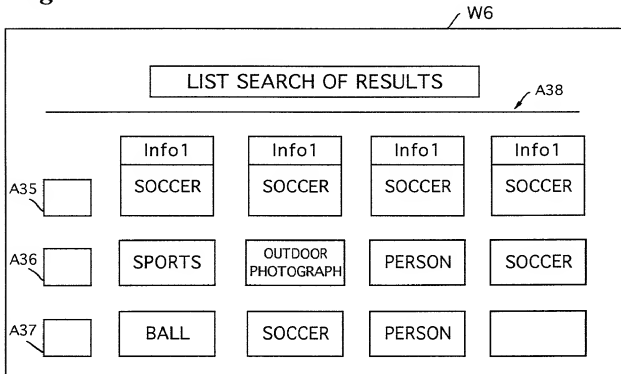
Fig. 21**Fig. 22**

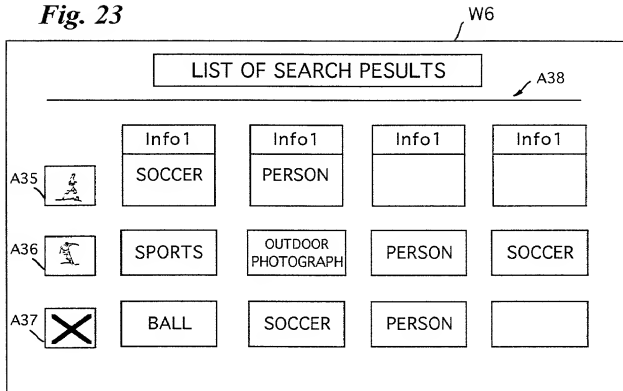
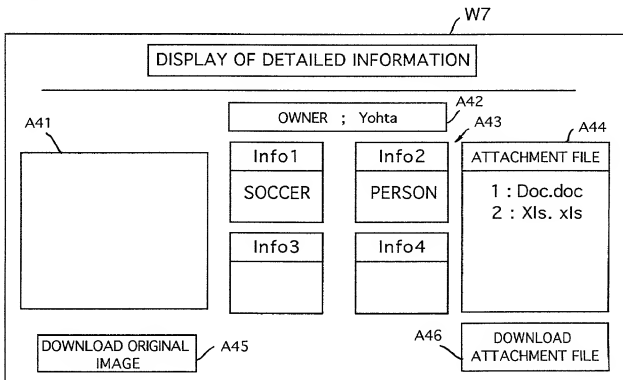
Fig. 23**Fig. 24**

Fig. 25

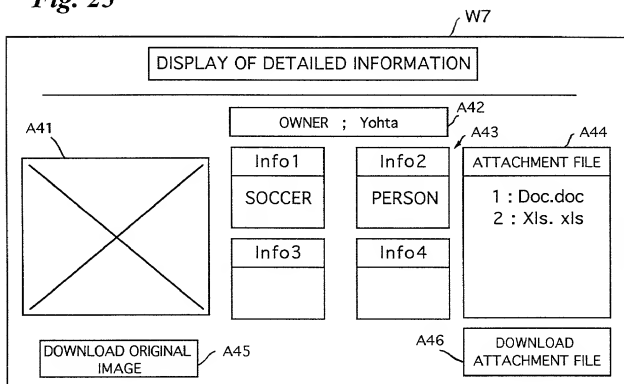


Fig. 26

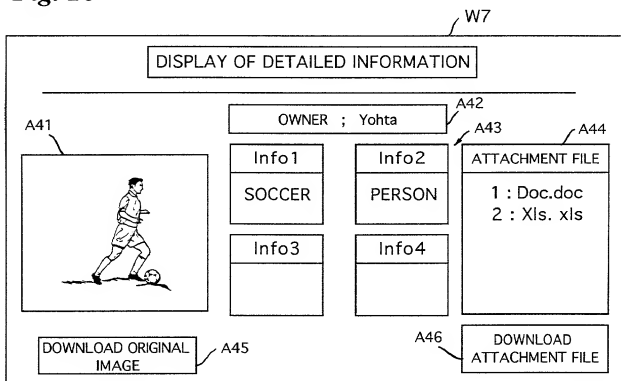


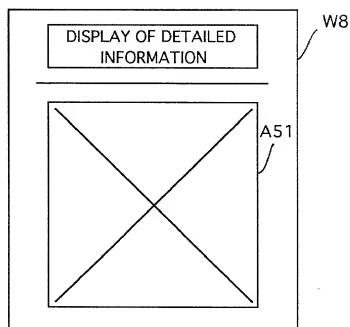
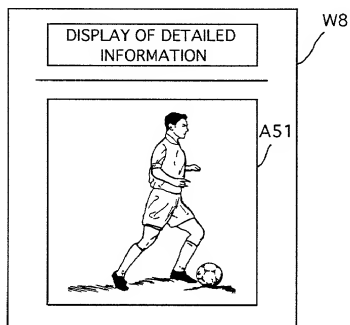
Fig. 27*Fig. 28*

Fig. 29

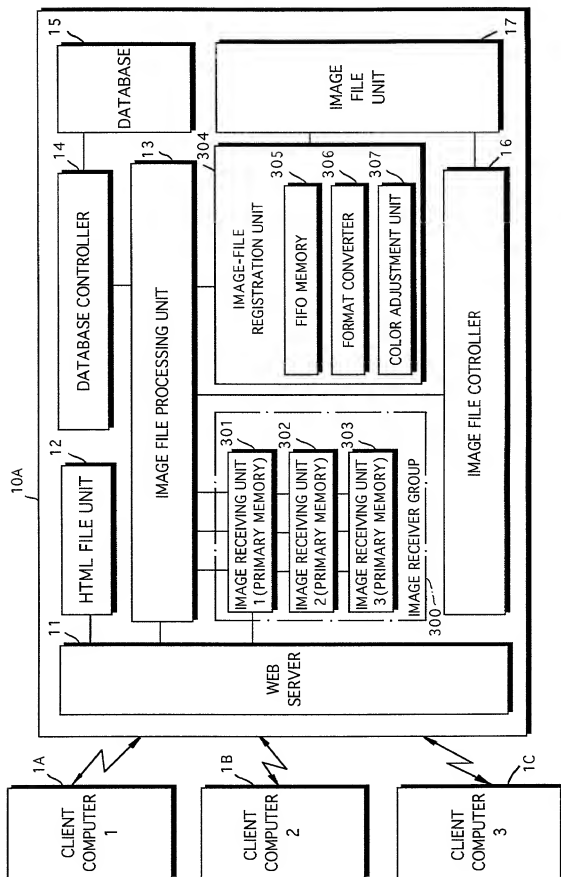


Fig. 1

Wi4

A8

ENTRY OF IMAGE INFORMATION

A12

ImageInfo1

ImageInfo2

ImageInfo3

ImageInfo4

A9

SELECT IMAGE

A10

Doc.doc

XLS.xls

A18

☒ CONVERT FORMAT (NSK-TIFF) A19

COLOR ADJUSTMENT LEVEL 7 A17

A11

ADD ON ATTACHMENT FILE

A20

START REGISTRATION

PRIVILEGE 0 A13

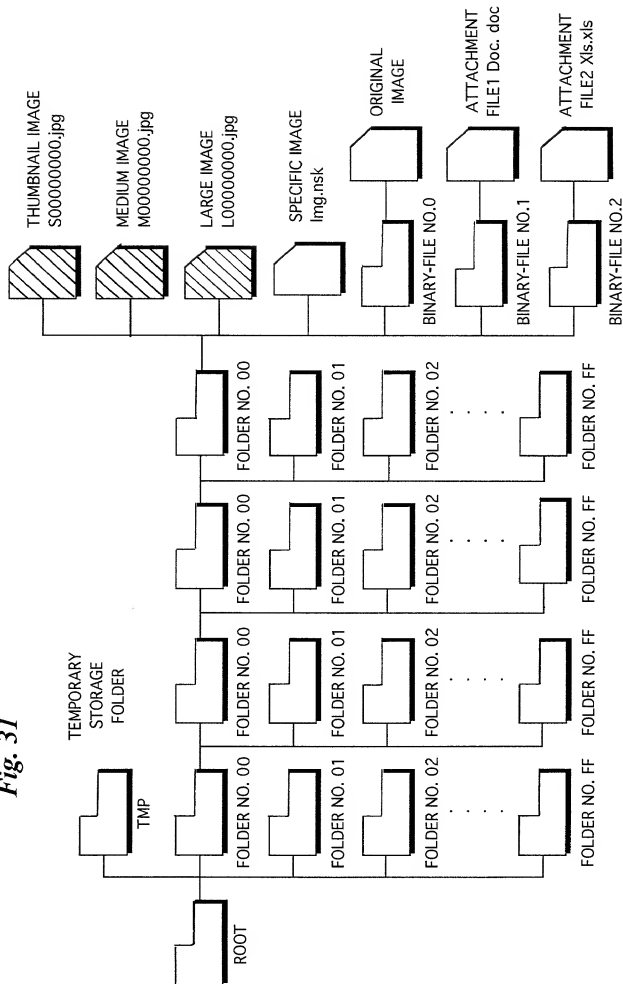
PRIVILEGE 1 A14

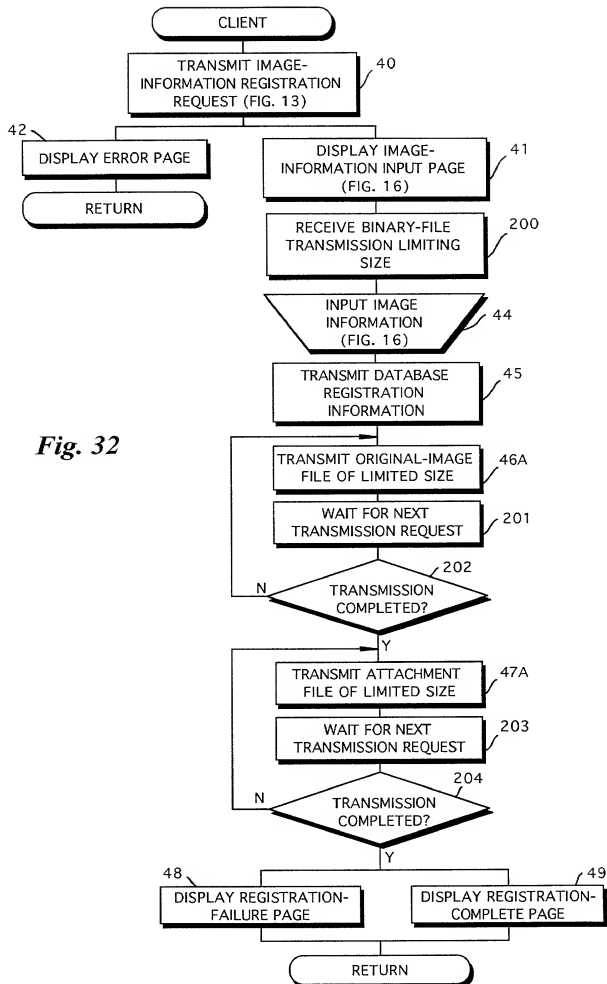
PRIVILEGE 2 A15

PRIVILEGE 3 A16

PRIVILEGE 4 A17

Fig. 31





00482275-011300

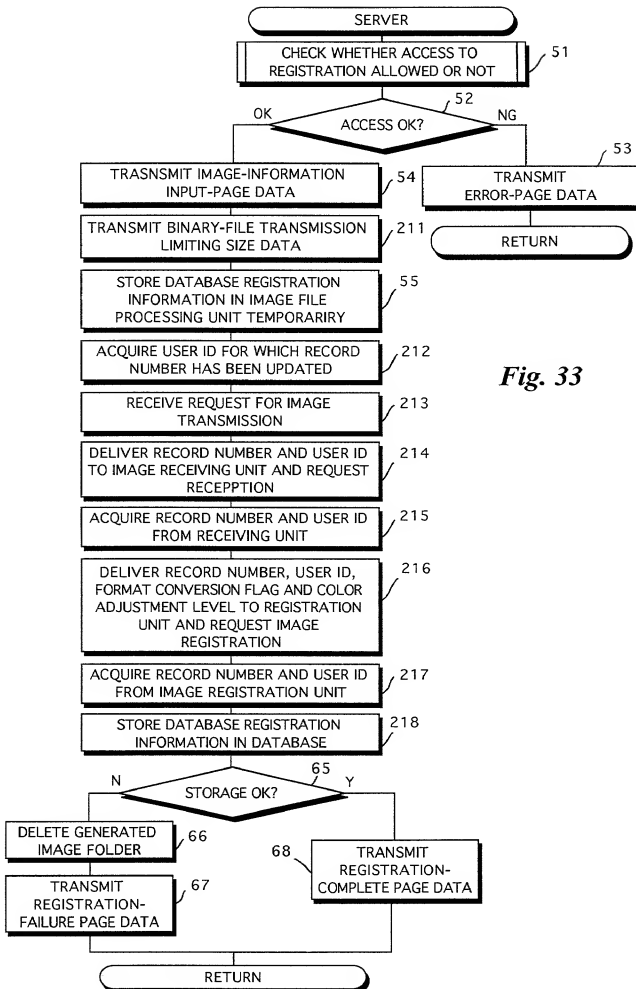


Fig. 35

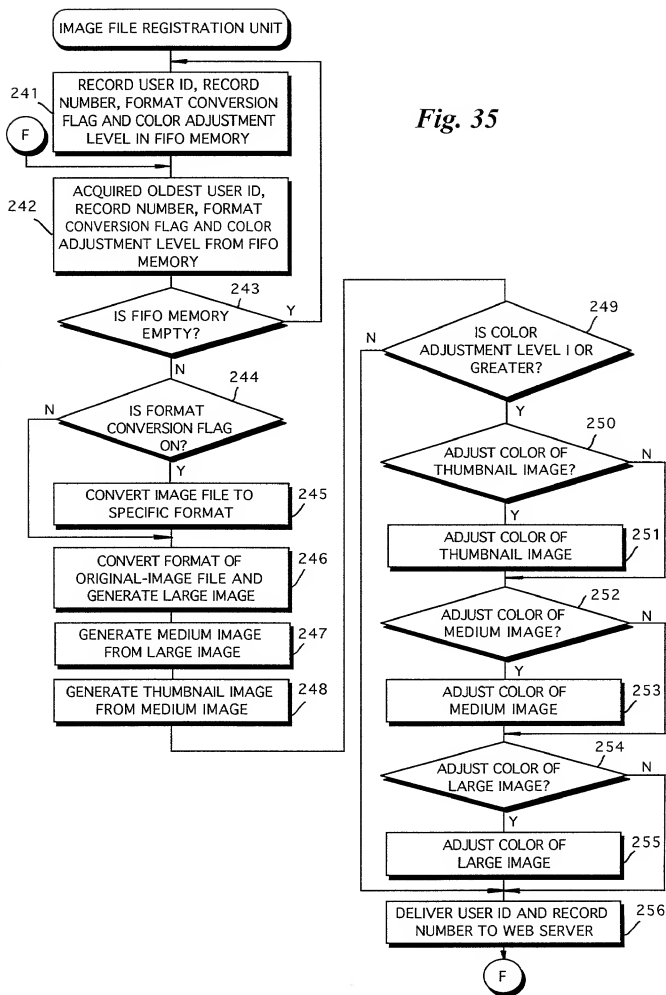


Fig. 36

W9

WHICH IMAGE DO YOU WISH TO DOWNLOAD?

A61 ☐ ORIGINAL-IMAGE FILE

A62 ☒ NSK-TIFF FILE

A63 ☐ LARGE IMAGE

A64

OK

00482275-011300

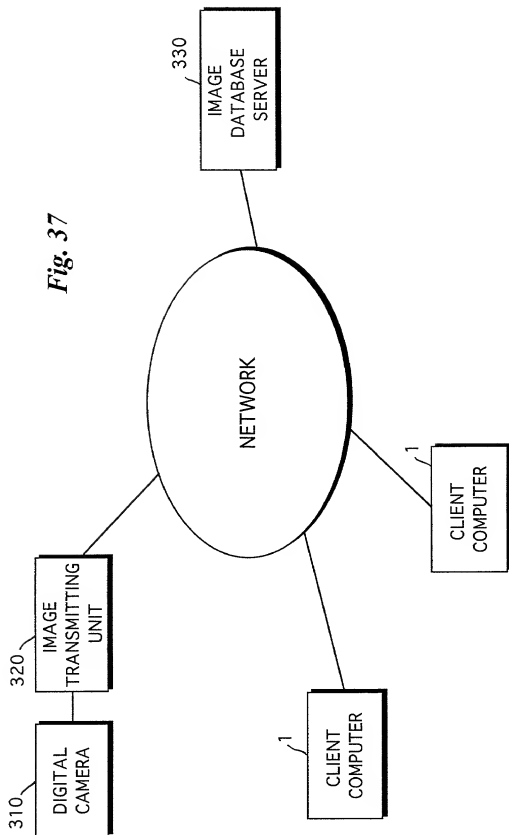


Fig. 38

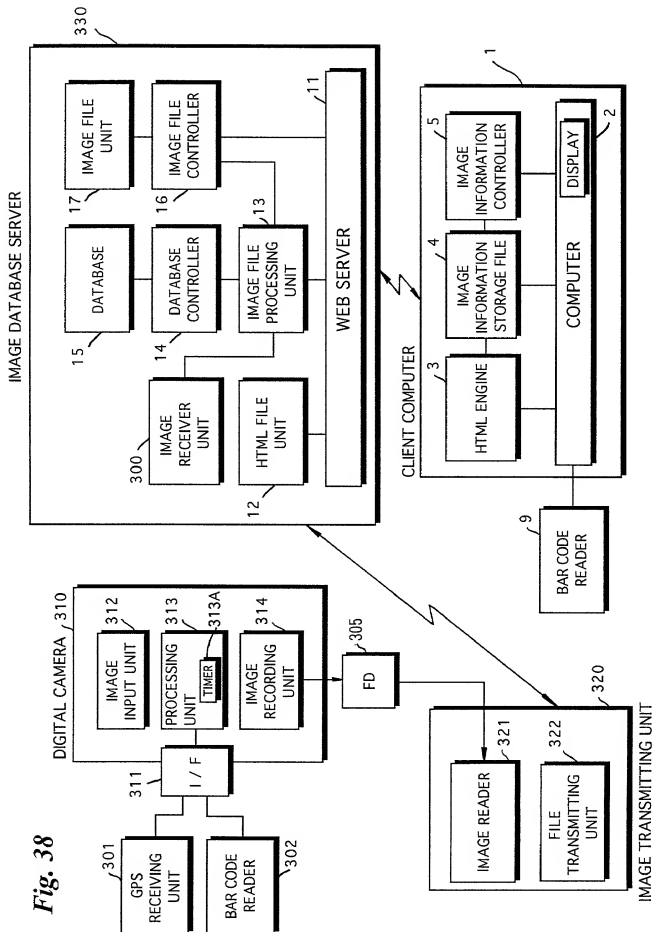


Fig. 39

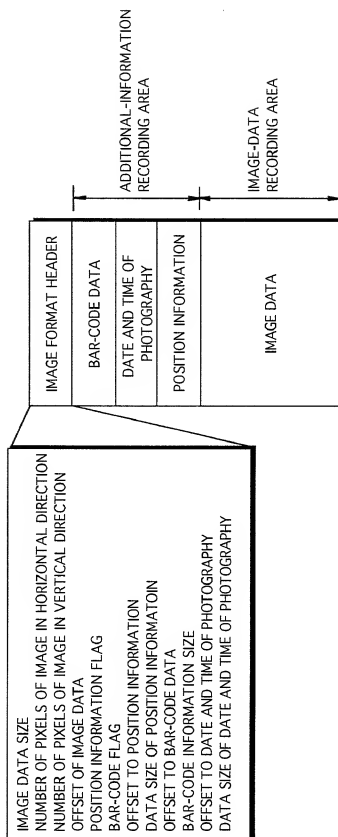


Fig. 41

BAR-CODE NO.
PRODUCT NAME (FinePix 700)
PRODUCT INFORMATION 1 (DIGITAL CAMERA)
PRODUCT INFORMATION 2 (PRICE)
PRODUCT INFORMATION 3 (INVENTORY)
PRODUCT INFORMATION 4

Fig. 41

IMAGE TABLE
IMAGE INDEX
BAR-CODE NO.
DATE OF PHOTOGRAPHY
POSITION INFORMATION

Fig. 42

CURRENT IMAGE INDEX
NEXT IMAGE INDEX

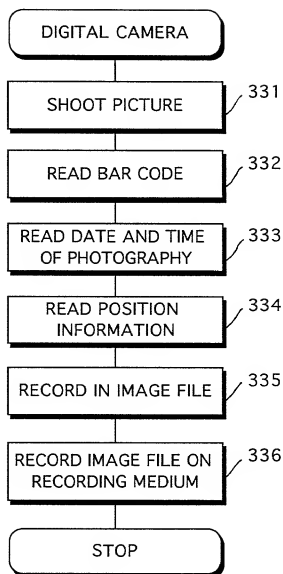
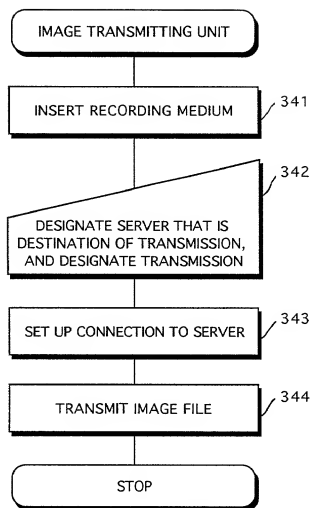
Fig. 43

Fig. 44

09482275-011300

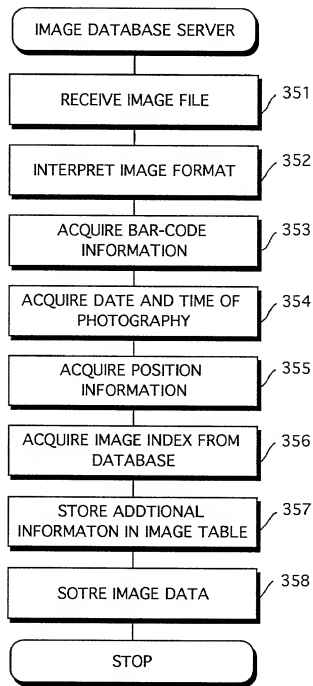
Fig. 45

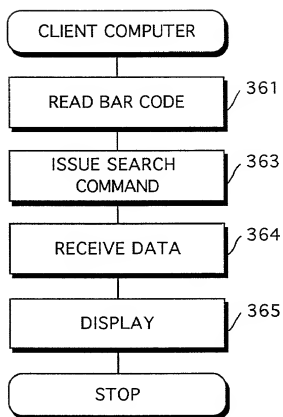
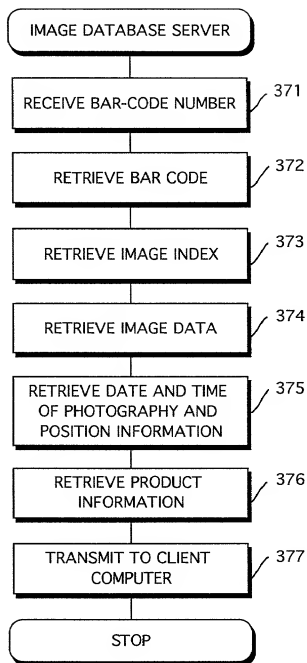
Fig. 46

Fig. 47

The diagram illustrates a system for data collection. On the left, a camera (labeled A71) is shown with a lens and a flash. A line connects the camera to a table (labeled A72) on the right. The table has six rows, each representing a different type of data collected during photography.

PRODUCT NAME
DATE AND TIME OF PHOTOGRAPHY
PRODUCT INFORMATION1
PRODUCT INFORMATION2
PRODUCT INFORMATION 3
PRODUCT INFORMATION 4

PRODUCT NAME
DATE AND TIME OF PHOTOGRAPHY
PRODUCT INFORMATION1
PRODUCT INFORMATION2
PRODUCT INFORMATION 3
PRODUCT INFORMATION 4

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

IMAGE DATA COMMUNICATION SYSTEM, SERVER SYSTEM, METHOD OF CONTROLLING OPERATION
OF SAME, AND RECORDING MEDIUM STORING PROGRAM FOR CONTROL OF SERVER SYSTEM

the specification of which:
(check one)

X (is attached hereto)
— was filed on _____
— as Application Serial No. _____
and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56*

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			priority claimed	
<u>11-008097</u>	<u>Japan</u>	<u>14/01/1999</u>	<u>X</u>	
(Number)	(Country)	(Day/Month/Year Filed)	yes	no
<u>11-079569</u>	<u>Japan</u>	<u>24/03/1999</u>	<u>X</u>	
(Number)	(Country)	(Day/Month/Year Filed)	yes	no
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	yes	no

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status: patented, pending, abandoned)
-----------------------------------	------------------------	---

Power of Attorney: As a named inventor, I hereby appoint Sean M. McGinn, Reg. No. 34, 386, and Frederick W. Gibb, III, Reg. No. 37,629, as attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. All correspondence should be directed to **McGinn & Gibb, P.C., 1701 Clarendon Boulevard, Suite 100, Arlington, Virginia 22209**. Telephone calls should be directed to McGinn & Gibb, P.C. at (703) 294-6699.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

00482275-011300

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Joint Inventor, If Any _____
Inventor's Signature _____ Date _____
Residence _____
Citizenship _____
Post Office Address _____

(An additional sheet(s) is/are attached hereto if the present invention includes more than four inventors.)

*Title 37, Code of Federal Regulations, § 1.56:

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith toward the Patent and Trademark Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and (1) it establishes by itself or in combination with other information, a prima facie case of unpatentability; or (2) it refutes, or is inconsistent with, a position the applicant takes in: (i) opposing an argument of unpatentability relied on by the Office, or (ii) asserting an argument of patentability.

00110-5228150